Volume 89 Number 13

STEEL

For forty-eight years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

This Week in Steel

WHETHER developments be international, political, financial or social, the common denominator of them all today is Business. When the British suspend gold payments, government budgets cannot be balanced, extensions of war debt moratoriums are refused, the railroads urge an advance in freight rates, or a closer community of interest between capital and labor is proposed, the first test is, What will be the effect upon Business? Paradoxically enough, although trade, considering everything, now is at the lowest level in a generation, this will be known as the Era of Business—an era when the wage rate of a Pittsburgh mill hand was front page news and Steel corporation directors' meetings were followed closer than the cabinet at Washington.

Bargains May Prove Boomerangs

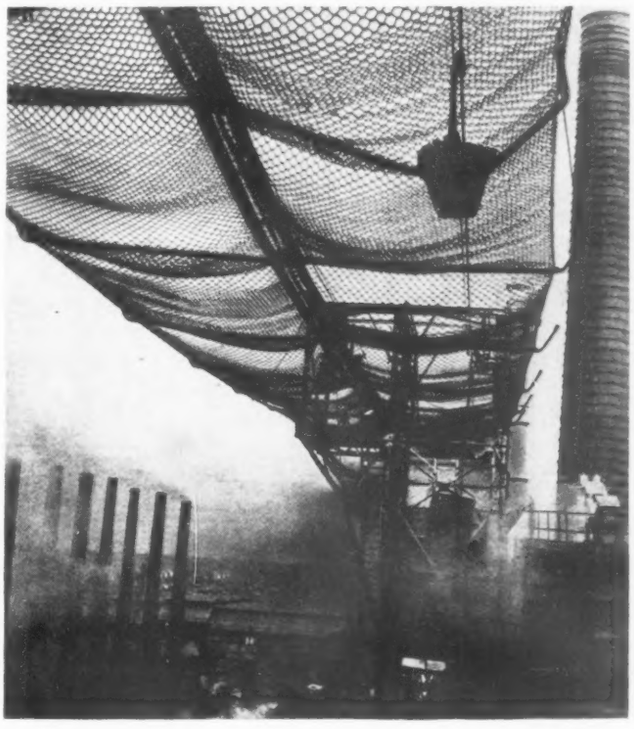
Whatever the form of relief suggested for Business, the key points usually are more remunerative prices and group action by industries chaperoned by the federal government to insure observance of the amenities of the antitrust laws. . . . The Steel Founders' society, for example, is considering (Page 21) making firm bidding a policy of its members in both buying and selling, that is, refusing modifications of prices bid unless specifications are revised. . . . Says the house organ of an important manufacturer of iron (Page 20): "The purchaser who insists first on quality in determining the price he will pay can do more than anyone else to stabilize the business of the world."

40 Per Cent Salvage in Unemployed

Typical of the group action doctrine is the Swope plan for collectivism in industry (Page 26), which has provoked more discussion than any other industrial plan thus far advanced. Official Washington harbors a reservation concerning it, foreseeing (Page 25) an opening wedge for government price-fixing. . . . Paramount in the Swope plan is industry's obligation to its workers. A New England industrialist would localize that obligation to "stable" workers, comprising in his appraisal 40 per cent of all unemployed (Page 18). Thirty-five per cent of the jobless are classified as nomads, 25 per cent as unemployables always dependent upon charity.

Labor Joins Prosperity March Oct. 1

On Oct. 1 labor in the steel industry will line up with stockholders and salaried employes and by taking a 10 per cent reduction in their wage rates (Page 17) join the march toward restored prosperity. Only the leadership of the Steel



Steel chain link—of the type used for fencing in this country—is suspended overhead, as a guard against coke which might fall from its carrier, at this Russian industrial plant

For many, easy shaves: Further diversifying its products, a steel producer, the first, is making safety razor blades (page 20) — using steel from this electric induction furnace

corporation was necessary to make the cut practically universal in the steel industry. In general, for 8 hours common labor after Oct. 1 will receive the same remuneration as for 10 hours in 1918.

Can Freights Rise as Labor Falls?

Wage matters are irrelevant, decreed the interstate commerce commission in ordering hearings on the railroads' application for a 15 per cent advance in freight rates, but after-events may prove the steel wage reduction announcement of Sept. 22 as timely. Oral arguments in the rate case (Page 19) are under way at Washington. . . . An agrarian senator intends (Page 25) proposing a 5-day week for federal employes with 6 days' pay. . . . Russia, where freight rate hearings are unknown, continues to press its development of automotive transportation, it being reported (Page 74) that a second mission to buy automotive tools is on the way.

More Steel in Building, the Panacea

When two or more steel men gather to settle the future of their industry they agree that new uses is the remedy, and among new uses the building industry's potentialities are greatest. . . . Chicago architects are ready (Page 18) with a 21-story office building whose steel would be fabricated in shops, eliminating 90 per cent of all field work, with floors of the battledeck type and the exterior sheathed in stainless steel or aluminum. . . . Also at Chicago an architect is promoting (Page 21) the construction of steel houses on a quantity basis, finding great merit—among other things—in the battledeck floor.

14 Tons of Building Per Tenant

New York also is alert to the building situation, a protagonist of skyscrapers citing (Page 20) the dead load of material—in the Empire State building it is 14 tons to every tenant—which more extensive use of steel would lessen. . . . However, in a Wilmington, Del., building recently the problem (Page 36) was one of too much steel. To permit removal of the lower part of a main column of a 14-story building for widening a driveway through the building, a horizontal double-plate girder was erected with the condemned column passing between the two webs. Bearing brackets were welded to the column above the girder, by means of jacks the column load was transferred to the girder, the column welded to the girder and the lower section cut.

Structurals Still Bulwark of Markets

In steel market news structurals also dominate. Led by a 58,700-ton bridge for New Orleans, awards this week (Page 52) top 90,000 tons, while fresh inquiry almost replaces lettings, 60,000 tons alone being in prospect for federal projects. . . . Automobile requirements for steel continue disappointing as a slack retail market dictates that new models be deferred (Page 24). An important automotive development is the marketing, soon, of a new chassis lubrication system. . . . British steelmakers, while harassed by higher taxes (Page 73) are relieved somewhat by a more generous allowance for depreciation. . . . Steelmaking operations in the United States limp along at 32 per cent (Page 47) in a generally sluggish market.

Over-Treatment Dangerous for Steel

Three types of tool and die steels in recent tests revealed cracks in the ground surfaces in the hardened condition, ascribable (Page 34) not to heat treating or grinding but to an abuse of these processes. The tests set danger signals against heat treatment which generates excessive strains, and grinding with too heavy feeds of a glazed wheel. . . . Facilities have been provided (Page 39) at Detroit for practical demonstration of the nitriding process. . . . Distinct economies are claimed (Page 41) for mixing blast furnace gas with coke oven gas in the open hearth.

U. S. Steel and Independents Cut Wages 10 Per Cent

NEW YORK—A reduction of wages amounting to "approximately 10 per cent," effective Oct. 1, in plants of United States Steel Corp. subsidiaries was announced at the Corporation's offices here, Sept. 22.

Immediately following the announcement, the Bethlehem Steel Corp. and the Youngstown Sheet & Tube Co. also announced a similar reduction, effective on the same date. It is believed other independent steel companies also will reduce wages, now that the Steel corporation has taken the initiative in an action long anticipated.

In the first announcement, Myron C. Taylor, chairman of the Steel corporation's finance committee, said:

"For the purpose of better meeting prevailing unsatisfactory conditions in the industry, wage rates will be reduced effective Oct. 1 approximately 10 per cent, varying somewhat in accordance with the character of the work performed. Such adjustment will be somewhat in line with the reduction recently made in salaried rates."

"Constructive," Says Mr. Grace

The announcement made by Eugene G. Grace, president, Bethlehem corporation, stated:

"We consider the action of the United States Steel Corp. in readjusting wage rates downward a constructive move. Bethlehem will make a similar adjustment, effective Oct. 1."

In Youngstown, O., Sheet & Tube announced a reduction of 10 per cent. President Frank Purnell said:

"In accordance with the usual policy of this company, wages paid in Sheet & Tube plants will be in keeping with the rates in effect in the industry. Sheet & Tube employes already understand the necessity of a wage reduction and are reconciled to it."

Approximately 220,000 employes are affected by the Steel corporation's action, but officials refuse to divulge the amount of the saving expected to result from the reduction.

Chairman Taylor's announcement is in line with previously published predictions in STEEL that a reduction would be made by Oct. 1. It reflects the unproductive rate of operations, and is regarded as a step to bring wages in closer harmony with the reduced cost of living.

Wage rates were substantially increased, and working hours reduced, in 1923, which was the last previous adjustment. In August, 1923, announcement was made of the abolishment of the 12-hour day. Labor then placed on a 10-hour basis was paid at the rate of $4.40 per day, or 44 cents an hour. Labor on an 8-hour basis was paid at the rate of 50 cents an hour, netting $4 a day.

A reduction of 10 per cent now in the 44-cent rate for 10-hour labor would take it back approximately to the level in effect in April, 1918. A similar reduction in the 50-cent rate for 8-hour labor would make the rate 45 cents an hour.

In the depression of 1921 there were three successive decreases, as shown in the accompanying table. With these exceptions every change since 1915 has been an advance in the rates.

Through the past two years the Steel corporation has consistently pursued a policy of alternating work among employes. From Oct. 1, 1930, to Oct. 31 this year the average number of employes of the regular force given employment exceeded 94 per cent.

The Steel corporation's welfare activities have involved the expenditur of $1,700,000 per year, but during the past year direct expenditures for relief have cost an additional $1,000,000.

The Corporation during the past year, it is understood, has made no manufacturing profits after interest on its operations. It has upheld wages, reduced dividnds on common stock, and has rduced salaries 10 to 15 per cent.

Business conditions have necessitated 22 wage adjustments within the 30 years of its existence. It has reduced wages on only four occasions, and it has voluntarily raised them 18 times.

U. S. Steel Corp. Rates For Common Labor

	Wages for 10 hrs.	Per cent advance	Per cent advance over 1915
1915	$2.00	....	....
Feb. 1, 1916	2.20	10	10
May 1, 1916	2.50	13.6	25
Dec. 15, 1916	2.75	10	37.5
May 1, 1917	3.00	9	50
Oct. 1, 1917	3.30	10	65
April 16, 1918	3.80	15	90
Aug. 1, 1918	4.20	10.5	110
‡Oct. 1, 1918	4.62	10	131
‡Feb. 1, 1920	5.06	10	153
‡May 16, 1921	4.05	*20	102.5
July 16, 1921	3.70	*8.6	85
Aug. 29, 1921	3.00	*18.9	50
Sept. 1, 1922	3.60	20	80
April 16, 1923	4.00	11	100
††Aug., 1923	4.40	10	120

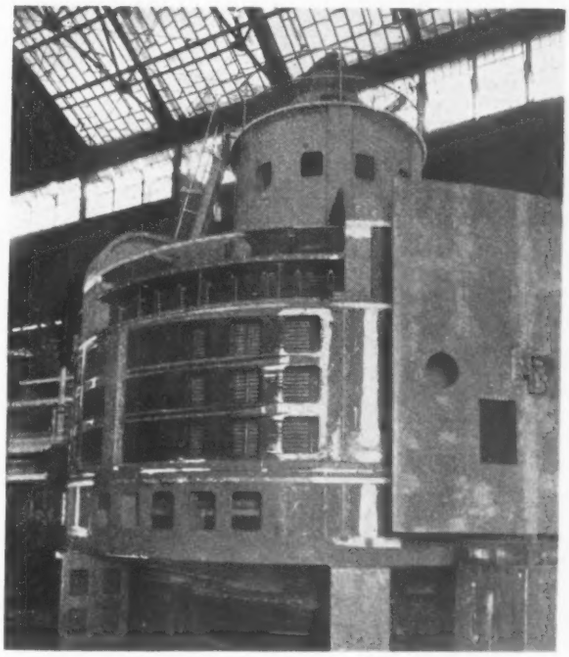
*Reduction.

‡Basic 8-hour day in effect; time and one-half for overtime.

††Twelve-hour day abolished. Labor placed on 8-hour shift paid at rate of 50 cents an hour.

Fuel & Iron Co. Cuts

All employes of the Colorado Fuel & Iron Co., Denver and Pueblo, Colo., receiving less than $4000 annually will be reduced 10 per cent effective Oct. 15. All executive officers of the company took salary cuts some time ago.



One of the huge generators under construction for the Diablo powder plant of Seattle's Skagit river hydroelectric development. Two sets of generators, turbines and waterwheels have been ordered, each set to generate 83,000 horsepower. The units are said to be the largest of their type. Generators and turbines are being manufactured by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and the waterwheels, 46 feet in diameter, are being constructed by the S. Morgan Smith Co., York, Pa. This unit will be shipped in sections

Steel Buildings To Be Fabricated in Units, in Shops, Assembled in Chicago

CHICAGO—Construction of unit fabricated steel buildings, including an office building, apartment house, theater, residential group and a number of private dwellings, will be started in Chicago late this year or early in 1932.

Plans for the office building, a 21-story structure to be erected on Rush street and Delaware place, just outside the Chicago loop, have been so far advanced by Bowman Bros. Inc., architects, that work may be started within 90 days. A contract has been awarded to the Minneapolis plant of the General Bronze Corp., Long Island City, N. Y., for fabricating the "parts" of the office building, for shipment in large sections for quick erection.

Unit fabrication is to be stressed in the building, which will be assembled on the same principle as a motor car; 90 per cent of the usual field work in constructing an office building will be eliminated.

Field erection will comprise only the putting in place of the wide flange column sections and girders. The exterior walls will be of 18 gage metal, either stainless steel or aluminum, this choice still being unsettled. The wall and spandrel sections, which are to be 4 feet 6 inches high and 6 feet long, will be slipped into place between the mullions, spaced about 6 feet on centers. The walls will be backed with a layer of cork, calicel (steelworks slag), or rock wool, for insulation, the insulating material to be attached to the steel or aluminum sheets, making the exterior curtain walls 3 to 4 inches thick.

Battledeck plate floors will be welded to the junior beam joists in the shop, and shipped in sections 6 feet wide and 18 feet long to the erectors. Cork, linoleum or other floor insulation will be added. Interior partitions will be made of steel cores of sheet material, about 14 or 16 gage, to be backed and faced with either cork, calicel or rock wool. Metal welded windows, double glazed and side-sliding, will be used, with Venetian blinds as a part of the window. Double panes of plate glass will be separated with an inch of air space by an air-tight gasket. It is estimated that heat losses can be reduced thus by about 40 per cent.

As most of the parts of the all-metal office building can be fabricated in the shop in large units, shipment of these parts will be limited in size only by the capacity of the trucks which will deliver them to the site. These units can be put into place with derricks, requiring a minimum of man power for erection.

All parts are to be carefully machined, and only a minimum of tolerances will be allowed. Since the metal parts will be produced with machine-like accuracy, it is pointed out that the building tradesmen must be skilled, although in the end, it is stated, labor will be saved.

The office building will be heated electrically, according to present plans, and will have electrical refrigeration and an air conditioning system. High-speed micro-drive elevators will be installed.

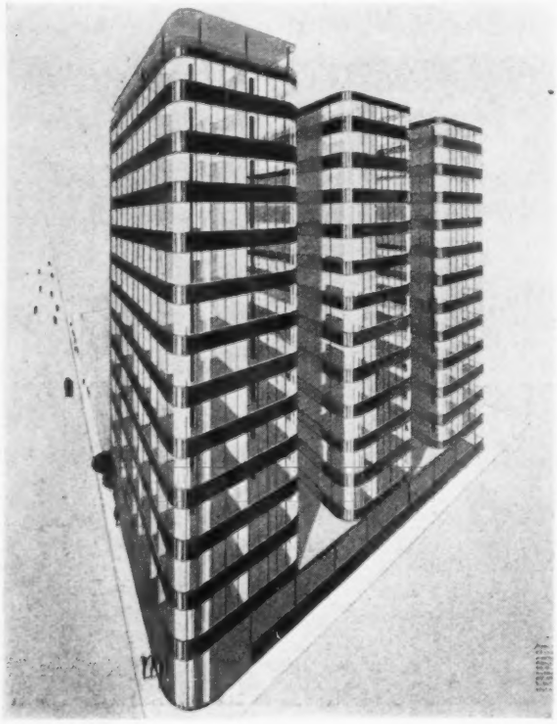
Advantages of shop fabricated units for this work rather than job fabrication are seen in the fact that the machinery, including cranes, punches, presses, and welding, available in shops, facilitates greater speed and requires less man power. It is stated that shop fabrication also reduces inaccuracies.

The financial sponsors also point out that wrecking must be considered, because the economical life of a building in most crowded areas is comparatively short. Walls, floors and partitions built in large units, bolted together, require much less time to dismantle than most types of monolithic construction. Salvage value must be considered in the structural steel, stainless steels, metal windows, metal floors and metal partitions.

Equals 36-inch Wall

The thinner metal wall, 3 to 4 inches, is said to have the same heat retaining value as a 36-inch masonry wall. Recent tests of a metal building by the architects show the coefficient of heat transmission of the metal insulated wall to be 0.0785. The tests also show that if 13-inch masonry walls were used, the coefficient would be 0.234. The ratio of the two indicates that the metal wall is 2.98 times more efficient, it is stated.

The heat loss in the building under test for the year was about 1,700,000,000 B.t.u.'s, equivalent to about 500,000 kilowatt hours. At an average cost of 1 cent per kilowatt hour, the total annual heating cost would be only three times as much as if the present standard walls were used.



Ninety per cent of the usual field work in the construction of an office building will be eliminated in this building, in Chicago, according to the designers. Field work will be limited to the placing of wide flange column sections and girders. Walls and partitions, of special type, will be fabricated in the shop, and assembled "on the same principle as a motor car." "The time of erection of the entire building can be figured in days, rather than weeks or months," the architects say

Industry's Obligation to Stable Worker, Says Hook

Industry's obligation is "to its stable employes" and to them only, declared James W. Hook, president, Geometric Tool Co., New Haven, Conn., in addressing the New England council recently. Unemployed were classified by Mr. Hook as follows: 25 per cent unemployables whom charity must care for as in normal times, 35 per cent casuals or nomadic workers for whom public works must be planned in periods of bad business, and 40 per cent stable workers who want to work and are essential to industry.

Planning, of the kind "that will squarely face the evils of unbridled competition, destructive governmental restraint, absentee ownership and

security-jobbing financial profiteering" was urged by Mr. Hook, who is a member of the President's commission on unemployment relief.

D'Arcambal Heads Steel Treaters

Boston—A. H. d'Arcambal, sales manager of small tools, Pratt & Whitney Co., Hartford, Conn., has been nominated for president of the American Society for Steel Treating for 1932. For the past year he has been vice president.

W. B. Coleman, president, W. B. Coleman Co., Philadelphia, a director of the society for the past two years, was nominated for vice president.

Other nominations announced by the nominating committee upon the opening of the thirteenth annual National Metal congress at Hotel Statler were: Treasurer for two years, Arthur T. Clarage, Columbia Tool Steel Co., Chicago Heights, Ill.; directors for two years, Charles F. Pascoe, consulting metallurgist, Montreal, Que.; and H. D. McKinney, metallurgist, Driver-Harris Co., Harrison, N. J.

Election of the nominees is assured since there is no contest for any office, and the offices will be assumed on Jan. 1, 1932.

Board of directors for 1932 will consist of the new officers and the following whose terms have not expired: Retiring president J. M. Watson, metallurgical engineer, Hupp Motor Car Corp., Detroit; W. H. Eisenman, secretary, 7016 Euclid avenue, Cleveland; and directors, B. F. Shepherd, metallurgist, Ingersoll-Rand Co., Phillipsburg, N. J., and F. B. Drake, Johnson Gear Co., Berkeley, Calif.

Co-operating in the congress with technical sessions throughout the week are the American Society for Steel Treating, American Welding society, iron and steel and institute of metals divisions of the American Institute of Mining and Metallurgical Engineers, iron and steel and machine shop practice divisions of the American Society of Mechanical Engineers, and the Society of Automotive Engineers.

The National Metal exposition at Commonwealth Pier opened its doors Monday noon with more than 150 exhibitors displaying metals and alloys, metallurgical production and inspection equipment and welding apparatus. Many of the exhibits are in operation.

Alabama coal production in 1931 will probably total 13,000,000 tons, against 18,000,000 tons normally.

Railroads' Case for Freight Rate Advance in Final Stage

WASHINGTON — Campaign of the railroads to win a 15 per cent advance in freight rates went into the final stage, Monday, Sept. 21, when oral arguments pro and con were started. On the dais was not only the entire interstate commerce commission but also representatives of many state railroad commissions.

While the commerce commission is endeavoring to conclude arguments by Saturday, Sept. 26, requests for time cover more than this allotment. In anticipation of this week's oral argument, more than 100 briefs were filed—53 on Sept. 19 alone. A majority of briefs oppose the application for an advance.

While any suggestion of a date when the commerce commission will decide the case is pure speculation, on the basis of past performance it is not unreasonable to expect action the second or third week of October.

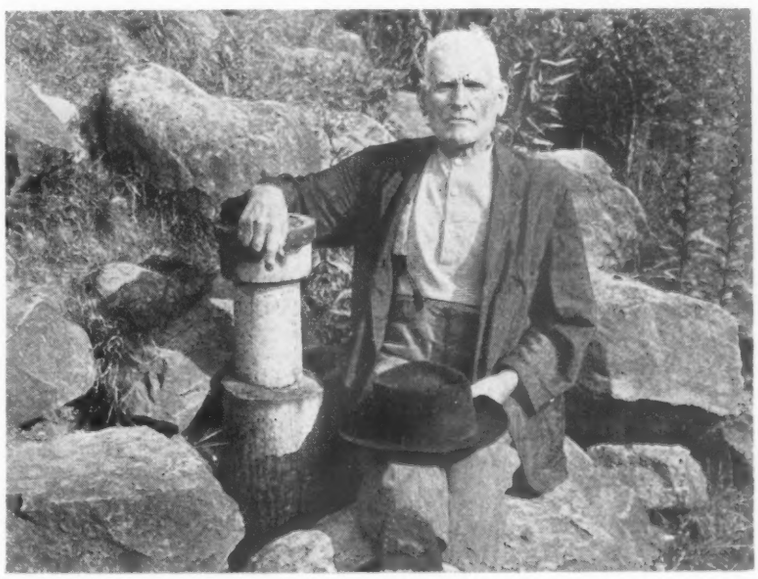
There is a good deal of speculation that an increase of 5 to 10 per cent will be granted, with the effective date close to the end of the year. Some, however, look for the application to be denied, which will put the railroads in the position of having attempted every means of increasing their revenue, and leaving their only alternative a reduction in wages.

Arguments and briefs this week in support of the application for a 15 per cent rise were, in general, a summary of the declining earnings of the carriers, the loss of business to trucks and waterways, the impossibility of effecting further economies and the right of the transportation systems to rates which would be remunerative. For a 4 per cent average return 15 per cent higher rates are imperative, is the contention.

Opponents of the proposed advance take the position that an increase in transportation charges would be contrary to the general tendency at this time, that industry cannot afford the further handicap of higher tariffs. The commerce commission consistently, during the hearings, ruled out references to wage costs, but there was an undercurrent that a possibility of liquidation exists there.

The opening gun in the oral argument by the railroads was fired by Clyde Brown, chief counsel for the New York Central. He stressed, initially, the contention that the commerce commission has the power to establish "just and reasonable" rates without taking specific commodities into consideration.

Mr. Brown told the commission that "the assertions of the carriers concerning their financial condition



Photo, National Petroleum News

For all the line pipe, casing, drilling equipment and other markets opened up since the drilling of the Drake oil well near Titusville, Pa., 72 years ago, the steel industry can thank the crew of which Sam Smith, pictured above, is the last survivor. The casing in the Drake well, first in the United States and shown above, was put down in 1880, when the well still was producing

and their need of additional revenue are not seriously controverted, if indeed they are controverted at all." He said "objections are made to the relief sought, based, generally speaking, upon the contentions that evidence of the financial needs of the carriers, however conclusive it may be, does not establish adequate ground for a uniform percentage increase in the level of the freight rates, and that the diversion of traffic to other forms of transportation resulting from the proposed increase would be so substantial as to overcome the gain which would result from the increase in the rates upon traffic which would concededly continue to move by rail transportation."

Claims Ample Authority

He reviewed at some length the conditions attending the return of the railroads from federal control and then took up in detail decisions of the United States Supreme Court in which the legislative policy was considered and applied.

"We shall find," said Mr. Brown in this connection, "in the opinions of the court ample confirmation of the statements we have made concerning the conditions under which the new legislation (that of 1920) was enacted, the purposes for which it was enacted, and, above all, the paramount importance of the financial problem and the consideration to be given it in determining upon general increases or decreases in the level of rates."

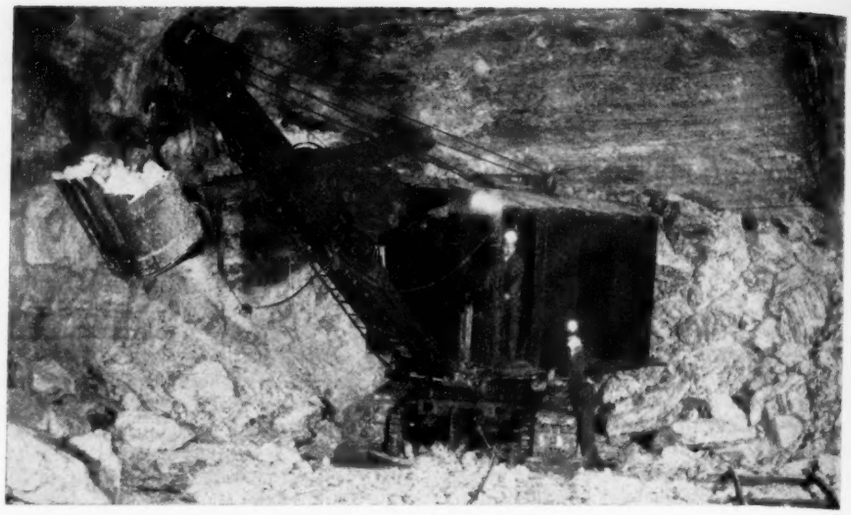
After discussing the present depression conditions and their effect on the roads Mr. Brown said that "the powers left to railway managements to meet these adverse conditions were very limited. They could not increase rates without the approval of this commission. They could not reduce scales of wages without passing through the long procedure of conference and arbitration.

Pilling & Co. To Retire From Business Dec. 31

W. S. Pilling, president, Pilling & Co. Inc., 1500 Chestnut street, Philadelphia, announces that this company will retire from business at the close of this year. The company has been engaged in the sale of pig iron and related activities, with headquarters in Philadelphia during the past 40 years.

On Oct. 1 the E. & G. Brooke Iron Co. will take over the direct sale of its iron. This account long has been handled by Pilling & Co. Other departments of Pilling & Co. Inc. will be liquidated prior to Dec. 31, 1931.

"It is needless to comment upon changes in business conditions which have made this action necessary," says the announcement.



Iron ore, coal, or salt—it's all the same to the electric shovel. Here is a "Big Bertha" munching away, down in a Michigan salt mine

Plan Packaging Show

Problems of packaging and shipping will be discussed at the second packaging, packing and shipping conference and clinic to be held under direction of the American Management association at the Palmer House, Chicago, next March 7-12. Exhibitors at the accompanying exposition will include the Acme Steel Co., Chicago; Container Co., Van Wert, O.; Container Corp. of America, Chicago; J. L. Ferguson Co., Joliet, Ill.; Gerrard Co., Chicago; Package Machinery Co., Springfield, Mass.; Stokes & Smith, Philadelphia; and Triangle Package Machinery Co., Chicago.

Insist on Quality, and Help Stabilize Business

THE man who buys on price alone has an unbalancing effect on all industry. He may not feel the effect immediately and may even rejoice in his one-sided bargain; but the interrelation of business is of such a nature that these "bargains" become boomerangs to legitimate business.

Earnings must come from profits on individual transactions. The buyer who constantly whittles the profits out of his source of supply lowers the purchasing power of those engaged in that industry, which in turn may directly affect the sale of his own product.

Competitive conditions have driven prices to low levels. So long as quality is maintained with a legitimate profit, the foundation is sound. The purchaser who insists first on quality in determining the price he will pay, can do more than anyone else to stabilize the business of the world.

—THE PURE IRON ERA

Steel Company Now Making Razor Blades

Razor blades for the first time are being manufactured and marketed by a steel company. The Heppenstall Co., Pittsburgh, manufacturer of shear knives, die blocks, forging and piston rods, anounced the introduction of its Hardtem razor blade at the National Metal exposition in Boston. Although it is a far cry from shear knives to razor blades, and from the company's annual steel ingot capacity of 25,450 tons to the sliver of metal that goes into an individual blade, Heppenstall's experience formed the background for the development of the material used in this new product.

In 1928 the company introduced a new shear knife that was guaranteed to give four times the service of any plain carbon knife on the market and this steel in a modified form has been adopted for use in the making of razor blades. The same year the Heppenstall Co. pioneered, in this country, with the introduction of the electric induction method of steel melting, and this type of furnace is being employed in the production of razor blade steel.

Sees Metals Used for Skyscraper Exteriors

The big immediate development in skyscraper construction will be more intelligent and general use of metal.

states William F. Lamb, of the firm which designed the Empire State building, New York, in an interview in *The New York Times*. Said Mr. Lamb:

"Some day we are going to be able to build our walls of metal, backed by insulating material, and without the heavy masonry that today loads down our steel skeletons.

"The Empire State building weighs 365,000 tons and is built to house about 25,000 persons. This means that it takes more than 14 tons of building to support a man—rather a striking demonstration of the disproportion between a modern building and the load it is intended to carry. Some day, by the use of metal in place of masonry, we shall considerably reduce the disproportion, I believe."

Steel Houses on Quantity Basis Urged at Chicago

Chicago—Steel dwelling house production on a quantity basis is being advocated by one or two architectural firms here. Henry Dubbin, of Dubbin & Eisenberg, points out significant features of economy in the dwelling house which he built for himself of welded steel roof and floor construction, through the saving of nearly 20 per cent in space by the use of battledeck floors and roof.

Floors of this house are only 6¾ inches thick, compared with the average of 15-inch floors in the ordinary house. The roof is flat and of the same steel construction, thus saving the space ordinarily devoted to an attic. The architect states that with this saving in cubic footage in construction costs, the steel battledeck house will be cheaper than ordinary construction, even if the cost is 15 per cent more per cubic foot.

Firm Bidding Policy Urged By Steel Founders' Society

SUBMISSION of a price accurately determined with reference to cost, to remain unchanged unless a change in buyer's specifications warrants a different quotation"—this is a policy which the Steel Founders' Society of America is confident will eliminate price-cutting and rid industry of many evils.

After wide discussion—chiefly favorable—at the meeting of the society at Chicago Sept. 17, on motion of S. Wells Utley, of Detroit, a resolution declaring firm bidding to be the policy of the society, both in selling and in buying, will be put up to the society at the December meeting.

Precludes Price Fixing

Firm bidding, the resolution states, "precludes any suggestion of price fixing by the seller or any prospect of price revision in the mind of the buyer, and will logically result in more accurate cost estimates, improved quality of product, increased plant efficiency, maintenance of wages and conditions of work at a satisfactory level, with lower prices to the consumer—highly legitimate considerations in the public interest."

W. H. Worrilow, Lebanon Steel Foundry, Lebanon, Pa., emphasized the value of association activity in periods of dull business and deprecated any lack of interest or dissension. With operations at an average of 25 per cent among steel foundries, sales, operating and financial skill is requisite and reprehensible practices in sales should be taboo.

Granville P. Rogers, managing director, presented his report relating the work and accomplishments shown under the 57 distinct services offered by the society to its membership. Homer J. Buckley, Buckley-Dement & Co., recommended compilation of selected lists of prospects, stating that a study of buyers' interest is necessary in the period of economic recovery.

Business among steel foundries, according to individual members' reports, was at a low ebb in August, with the average rate of operation at about 25 per cent. Among the 50 members present, representing about half the member firms, many reported inquiries better, with seasonal demand serving to strengthen the fall outlook.

In eastern sections, activity in textile trades has brought improvement. In the automotive regions, although orders are not appearing, pattern shops are busy. Similarly, in the Chicago district, member firms operating patternshops report full time operation on new patterns and changes in design upon existent equipment for which orders have not yet been placed.

Outlines of Plan

Arthur Simonson, Falk Co., Milwaukee, presented a complete resume of the merits of firm bidding, giving full credit to W. W. Nichols, Allis-Chalmers Mfg. Co., Milwaukee, W. E. Farrell, Easton Car & Construction Co., Easton, Pa., and Robert Gaylord, Ingersoll Milling Machine Co., Rockford, Ill., for much constructive work given to advancing this sales practice.

Maj. R. A. Bull, Electric Steel Founders' Research Group, Chicago, presented a detailed technical discussion on the properties of steel castings which should be known to all steel foundry salesmen. He stated that no steel foundryman is thoroughly familiar with all the characteristics of metal capable of being manufactured in his plant.

Probably every week, steel castings are being manufactured in the country, intentionally covering the wide range from 50,000 to 200,000 pounds per square inch tensile strength, having yield point, elongation, reduction of area, fatigue, impact, hardness and other values establishing the ability of the material to meet almost every condition in consuming industries. He presented comparative data on steel castings and competing materials in various types of service.

R. F. Nash, Pettibone-Mulliken Co., Chicago in presenting the report of the cost committee of which he is chairman, announced the preparation of a standard form of estimate sheet.

Artificial lights in offices, schools, show windows and signs, can be turned on and off automatically as the "electric eye," or photoelectric control relay, measures natural light intensity and operates the main switches. Manufactured by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., the device is said to be far more accurate than human judgment and effects substantial savings in power. By convenient dials, the relay can be adjusted to operate at various light intensities

Industrial Men in the Day's News

Lawrence Carr Steele, Consulting Engineer, Aetna-Standard Engineering Co.

HIS affiliation of 30 years with the sheet and tin plate industry has been one in inventive and engineering capacities.

HIS work has been with American Sheet & Tin Plate, Wheeling Steel, Jones & Laughlin and Bethlehem Steel Co's.

MR. STEELE now joins Aetna-Standard Engineering Co. as consulting engineer on sheet and tin plate equipment.

LAWRENCE CARR STEELE, formerly consulting and experimental engineer with several sheet and tin plate plants and holder of more than 200 patents, is now affiliated with Aetna-Standard Engineering Co., Youngstown, O., as consulting engineer on sheet and tin plate equipment. His headquarters are in the general offices of the company, Youngstown.

Mr. Steele was born in West Virginia and completed his college education in Virginia. He entered the employ of the old American Tin Plate Co. as master mechanic and while there patented his first invention covering brushes or "wipers" for tinning machines, which control the amount of tin coating on tin plate. It was here, also, that Mr. Steele introduced the practice of beveled rolls in tinning machines.

Between 1903 and 1904 Mr. Steele was made district engineer of the plants of American Sheet & Tin Plate Co. in the Wheeling, W. Va., district, from where he progressed to the Pittsburgh engineering department of that company as engineer in charge of the Vandergrift district. About 1910 he entered the employ of the Jones & Laughlin Steel Corp., in charge of the installation of its tin plate plant at Aliquippa, Pa., following which he opened his own office in the Oliver building, Pittsburgh, as a consulting and designing engineer to the industry at large. It was about this time that he invented the Steele automatic doubler, which is in use today in practically the entire tin plate industry.

Another period of activity with American Sheet & Tin Plate Co. in connection with special sheet and tin plate equipment brought Mr. Steele up to the years 1922-1926, during which time he was connected with the Bethlehem Steel Co. at Sparrows Point, Md. During this time he brought out the improved Steele automatic doubler, known as the Steele vertical type, as well as to begin experiments which have resulted in the method of manufacturing sheets known as the combination system.

The many years of practical experience of Mr. Steele in the sheet and tin plate mills, coupled with his great inventive ability, have contributed much to the progress of the industry. Mr. Steele is a direct descendant of Robert Fulton, inventor of the steamboat.

CHARLES W. BENNETT, vice president of the American Sheet & Tin Plate Co., Pittsburgh, has been placed in charge of plant operations, succeeding William A. Irvin, recently made vice president of the United States Steel Corp. at New York. Mr. Bennett has been identified with the tin plate industry since 1897. He was graduated from the University of Wisconsin in 1892 and entered the mechanical department of the Illinois Steel Co., Joliet, Ill., where he remained for three years. In 1897 he was made mechanical engineer at the Ellwood, Ind., plant of the American Tin Plate Co., which later was combined with the American Sheet Steel Co. to form the American Sheet & Tin Plate Co. Mr. Bennett became assistant to the president of the latter company in 1906, which position he held until his appointment as vice president in 1925.

G. C. Kimball, recently chief engineer and assistant to Mr. Bennett, has been elected vice president of the American Sheet & Tin Plate Co. in charge of plant construction, improvements, patents, etc. Mr. Kimball is a graduate of Harvard and became identified with the American Tin Plate Co. in 1901, when he entered the general engineering department at Pittsburgh. He was appointed chief engineer in 1905 and held this position until his recent promotion. Mr. Kimball has been succeeded by H. G. McIlvried, who had been assistant chief engineer since 1925.

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Glenn R. LaPage, general sales manager of the Yates-American Machine Co., Beloit, Wis., manufacturing woodworking machinery, sailed Sept. 16 for Europe to spend six weeks in stimulation of the com-

pany's foreign sales campaign. He will visit company branches in 15 countries to acquaint the trade with new developments in the company's line of equipment.

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F. G. Brown has resigned from the Republic Steel Corp. and accepted a position with the Weirton Steel Co. as special sales agent.

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G. L. Williston, 428 Wayne street, Detroit, recently was appointed exclusive sales representative for the Sutton Engineering Co., Pittsburgh.

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Owen H. Wenning has succeeded Thomas C. Wright as sales manager for Worcester Pressed Steel Co., Worcester, Mass.

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Sir William E. Stavert has been elected chairman of the board of the Algoma Consolidated Corp., Montreal, Que., successor to the Lake Superior Corp.

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B. B. Greer has resigned as president and director of the New York Air Brake Co., New York, and has been succeeded by Lowell R. Burch, acting chairman of the executive committee.

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Howard W. Dunbar, works manager, Norton Co., Worcester, Mass., has gone to Europe to make a general business survey in connection with the machinery division of the Worcester plant.

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J. O. Ferch, who has been assistant advertising manager of Harnischfeger Corp., Milwaukee, was made advertising manager effective Sept. 10.

H. S. Strouse, formerly advertising manager, now is treasurer.

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Roy E. Boffenmyer, for 34 years with the Lamson & Sessions Co., Cleveland, has resigned and will take an extended vacation. His headquarters for the present will be the Trout-Ware Studios Co., Cleveland, of which he is president.

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James Marsden was presented with numerous gifts at a ceremony marking his 50th anniversary of service with the Utica Steam Engine & Boiler Works, Utica, N. Y., of which he has been foreman of its boiler shop since 1896. He continues in that capacity.

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Lawrence J. Card, 67, president of L. J. Card & Son Inc., Denver, was the subject of a sketch, Sept. 13, in the *Rocky Mountain News* as one of Denver's progressive business men. Mr. Card, a native of Deerfield, O., was originally in the grocery business, but when 42 organized the Rex Iron Works, of Denver, of which he was president and general manager. Later he and his son, Lawrence B. Card, founded his own company.

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Leon J. Cone has been appointed district manager, Duluth office, Sullivan Machinery Co., Chicago. He succeeds Jonathan A. Noyes, who has been promoted to manager of the company's coal machinery sales division with headquarters in the general offices at Chicago.

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M. M. Clark, formerly with the Central Alloy division of the Republic Steel Corp., and having a wide experience in the handling of various alloy steels, has become sales metallurgist for the Mitchell Steel Co., Cincinnati. Mr. Mitchell will devote his time to metallurgical and sales work in connection with alloy steels.

M. M. Clark

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C. W. Meyer, for many years manager of the Indianapolis branch of the Crucible Steel Co. of America, New York, retired from active service Aug. 1, remaining in a consultative capacity.

He is succeeded as Indianapolis manager by Roy Slaughter.

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Lewis E. Porter, vice president of the S. F. Bowser & Co., Indianapolis, for the last five years, has been transferred to the vice presidency and managership of the S. F. Bowser & Co. Ltd., at Toronto, Ont. No successor to Mr. Porter will be named. S. B. M. Bechtel, president, also announced the resignation of T. D. Kingsley, vice president in charge of eastern sales of the company, with headquarters at New York.

Obituaries

GEORGE H. VANT, district sales manager for Carnegie Steel Co. in the Cincinnati district, died of a fractured skull, in City hospital at Indianapolis, Sept. 15. Mr. Vant had put his car in a garage in Indianapolis, backing it against a curb near a ramp. He went around the rear of the car to get his bag and plunged over the curb down the ramp a distance of 12 feet. He was rushed to the hospital and died within the hour. The body was taken to his home in Cincinnati and later to Pittsburgh for interment. Mr. Vant was 52 years old, born in Ithaca, N. Y., and after a few years as a newspaper reporter at Ithaca became advertising manager and entered the field of salesmanship. In 1906 he went with Carnegie Steel Co. and a few years ago was assigned the Cincinnati office.

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J. M. Bolton, 81 head of the Bolton Road Maintainer Co., Council Bluffs, Iowa, died recently.

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Herbert Jacques, 53, shear manufacturer, of Worcester, Mass., was killed recently by a fall downstairs in his home.

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Harry R. Armstrong, former secretary of the National Iron Works Co., Duluth, was drowned off Laguna Beach, Calif., recently, where he had made his home for the past four years. He was 72 years old.

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William A. Titus, 51, assistant technical superintendent of the Western Electric Co. at Chicago, and for many years head of the firm's installation department, died at his home in LaGrange, Ill., Sept. 19, after several weeks' illness.

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William D. Patterson, 28, president and treasurer of the American School of Welding, St. Louis, and vice president of the St. Louis Welding society, was killed Sept. 13 in a glider accident at St. Louis. A brother, J. Edgar Patterson, is vice president of the American school.

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John H. Staples, 58, head of the J. H. Staples Foundry Co., Mt. Vernon, Ind., died recently. For the past 9 years he had operated his own foundry, previously being a department head for the Kech-Gonnerman Co. The administrators of his estate have received court permission to continue the business.

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Christopher Hoff Sr., one of the founders of the Lee-Hoff Mfg. Co., St. Paul, elevator manufacturer, died Sept. 2 at the age of 84 after an illness of two weeks. He had been president of the company for nearly a

(Concluded on Page 68)

MIRRORS of MOTORDOM

DETROIT

WITH early fall retail sales of automobiles failing to disclose anything approaching seasonal improvement, business conditions generally continuing unsettled and wage reductions which may reduce prices on the industry's raw materials approaching, automobile manufacturers are increasingly disposed to hold back on production schedules of new models.

Ford's program reveals a cross-section of the industry's thinking. Originally a revised Model A was expected in midsummer. Then, as it became apparent the business situation would nullify any merchandising effort, the introduction was postponed until after Labor Day. The retail market continuing unpropitious, Ford decided to make 50,000 of the current model. Now this fall run has been increased to 65,000.

Meanwhile, dealer showing of the revised Ford has been pushed back until early December. Since Chevrolet usually waits out Ford, this General Motors subsidiary also may be expected to put the brakes on its program. For most manufacturers, the new model situation has made a complete cycle and is now back where it started. After all, the January shows will have something new to present.

Output Decline Not Rapid

Current production of passenger cars and trucks continues to decline, but not quite so rapidly as rumor has it. For the week ended last Saturday, output was above 40,000 units. Each passing week, however, vitiates September's chances of holding production to a parity with August. The estimate for August is 180,000 to 190,000 units, compared with 218,961 for July, and September may now undermine the 1931 low, which was 171,851 for January.

Production, of course, is a direct reflex of the retail market. In some industrial sections, particularly New England, sales are moderately good. It is the apathy of agricultural areas that is pulling down the industry at this time. Harvest time this year is not automobile buying time for the farmer. In neither truck production nor in exports is there any noteworthy change in the market.

The one bright spot in the automotive picture is the immovable date of the January shows. Certainly by the middle of October material must be released for the production of the new models to go on dealers' floors late in December and to be unveiled at the shows. There can be no postponing decisions, and on general principles October should see the tide stemmed.

To Equal 1930 Close

For the last quarter of 1930 output of trucks and passenger cars was October 154,401, November 135,754 and December 155,701. The most dire forecast for September output this year is about 170,000. Therefore, the final quarter of 1931 can be rather slack and still not plumb the depths of a year ago.

Assembly of Fords at all plants continues at about 3500 units daily, 3 days a week, leaving the Ford weekly output stand at 10,500 units. Chevrolet also is averaging about 3500 units daily, but despite inventory is assembling 4 days a week, putting its weekly total at 14,000 units.

Plymouth, after easing off for two weeks, has increased its daily assembly to just over 1000 units, 5½ days a week, giving it a weekly rating of about 6000. Thus, on a weekly basis, the comparison for these three principal low-price producers is Chevrolet 14,000, Ford 10,500, and Plymouth 6000.

Chrysler proper has stepped up its week's schedule from 625 units to 825, while Dodge also has made a slight gain from 1075 weekly to 1125. De Soto remains stationary at 575 units assembled per week working 5½ days.

Of the General Motors units other than Chevrolet, Buick is down for inventory, Cadillac-LaSalle holds at 225 a week, Oldsmobile is steady at about 750, while Oakland-Pontiac has curtailed from 1100 weekly to 800.

Graham has expanded moderately from 350 a week to 525. Hupp continues at just above 200 units weekly. Studebaker is down from 1200 units weekly to 800, Hudson-Essex from 750 to 600, Auburn-Cord from 500 to 375.

Willys-Overland is steady at 1200 per week, Reo at 200, Packard at 500, Nash at 650. Willys-Overland, incidentally, has passed its preferred dividend, and if repeated three more times John N. Willys and associates automatically would resume control of the company.

Expect New Lubricator

Provided General Motors does the logical thing of patronizing a manufacturer in which it has a large financial stake, there will be a shift toward a new lubrication system in General Motors cars.

Bendix Aviation Corp., South Bend, Ind., in which General Motors has a one-fourth interest, and Standard Oil Co. of Indiana, with headquarters at Chicago, have jointly organized the Lubrication Corp., incorporated in Delaware for $200,000.

The Lubrication Corp., whose name and capitalization both may be changed, will manufacture a new type of lubrication fitting, plans being at the stage where machinery is being designed for the Bendix plant at South Bend. From the preliminary announcement that this fitting may be serviced at an 180 degree angle instead of at one point only, it is assumed that the fitting will be perforated on the side as well as at the end.

A new type of connection between the fitting and the pump also has been designed, presumably of flexible

metal. One report is that the new system will enable certain parts to float in a lubricant in much the same manner that a crankshaft operates in a bath of oil.

The system will also be available for industrial machinery. Chemists of the Standard Oil Co. at Whiting have worked out formulas for new types of lubricants. A. Y. Dodge, at South Bend, is general manager of the new corporation.

The Business Week In Washington

COMMENT in Washington upon the proposal of Gerard Swope, president, General Electric Co., that industries stabilize themselves through group control of production by an interchange of trade information through trade associations under quasi-federal supervision is that the goal is desirable, necessary modification of the antitrust laws may be difficult, federal price fixing may be one result—and an undesirable one.

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Opposition to any sales tax legislation at the coming session of congress have been voiced by Senators Fletcher, of Florida, and Sheppard, of Texas.

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Walter S. Gifford, director of the President's organization on unemployment relief, has announced the appointment of a fourth major committee to be known as the committee on co-operation with national groups and associations.

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The tariff commission has refused to make an investigation into the tariff rates on steel antifriction balls. In April the Hider Steel Ball Works, Binghamton, N. Y., asked for increased duties.

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Bureau of labor statistics has recently completed a survey in which it is claimed there is a growing sentiment in favor of the 5-day week.

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A conference on home building and home owning has been called by President Hoover to meet here, Dec. 2-5.

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Senator Schall, of Minnesota, has announced that when congress convenes he will introduce a bill for a 5-day week in government establishments without any change in the scale of pay.

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Retail food prices in 51 cities reporting to the bureau of labor statistics showed an average increase of slightly over one-half of 1 per cent on Aug. 15 compared with July 15, but a reduction of about 16 2/3 per cent from Aug. 15, 1930.

Here and There in Industry

PITTSBURGH STEEL PRODUCTS CO., a division of the Pittsburgh Steel Co., Pittsburgh, is taking advantage of the present depression to launch a program of expansion in its facilities for manufacturing seamless steel tubes. It has purchased from the Aetna-Standard Engineering Co., Youngstown, O., a complete new mill unit of the push bench type. This process has not hitherto been used in this country in the manufacture of seamless steel tubes, although it employs as a basic principle the same method as used in the manufacture of steel shell forgings during the war. The principal feature is that it is able to produce tubes of small diameters by the hot-rolled reducing process, sizes which formerly could be produced only by the more expensive method of cold drawing.

This innovation in the manufacture of seamless steel tubing is expected to enlarge its field of application greatly in the smaller sizes. The product finds its principal outlet in oil country products, piping of all kinds, automotive parts, boiler tubes and mechanical tubing generally.

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Frederick Smith & Co., Halifax, N. S., has acquired a license from the Anglo Galvanizing Co. Ltd., London, Eng., for use of the Bianco process of galvanizing.

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Harbison-Walker Refractories Co., Pittsburgh, has moved its Philadelphia district sales office to the Broad Street Station building, Pennsylvania boulevard and the Parkway.

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Machinery Sales & Supply Co., Dallas, Tex., has succeeded the Woodworking Machinery Sales & Supply Co. The new company will handle metalworking equipment on a larger scale. T. W. Patton is manager.

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Eddy Stoker Corp., 372 West Grand avenue, Chicago, recently formed to manufacture automatic coal burning equipment, has elected G. W. Graham president, G. Donald Whitehouse vice president, and I. L. Fox secretary and treasurer.

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Sutton Engineering Co., Pittsburgh, has booked orders from the Renault and S. A. Andre Citroen companies of France for a sheet leveler for each interest. Other foreign business includes orders from the Amtorg Trading Corp. for one round straightener, four flat and shape straighteners and one sheet leveler.

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Deveboise-Anderson Co., 117 Liberty street, New York, has obtained the exclusive right to sell pig iron for the Alan Wood Steel Co., Conshohocken, Pa., with furnaces at Swedeland, Pa.

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Chromed Screw Corp., 1638 Gratiot avenue, Detroit, recently formed to specialize in plating of small parts, has elected W. B. Knight president and treasurer. Henry A. Strouse vice president and manager, and Lillian Strouse secretary.

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National-Erie Co., Erie, Pa., has completed its reorganization by electing William J. Johnson president, succeeding A. Hunter Willis, who resigned as president and general manager. B. L. Weaver continues as vice president and treasurer and Henry E. Scott as secretary and assistant treasurer. The company plans new financing in the hope of early restoration of operations.

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Waterbury Farrel Foundry & Machine Co., Waterbury, Conn., machinery builder, has opened a sales office in the Daily News building, 400 West Madison street, Chicago, to serve the Chicago district, northern Illinois and Wisconsin. A. R. Nichols has been placed in charge of the office after several years' experience in the home office at Waterbury.

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National Carbon Co., New York, has moved the flashlight case department from Newark, N. J., to Cleveland. It is being installed at the Edgewater works, West Seventy-third street and the New York Central tracks, where it will occupy 50,000 square feet of manufacturing space. The entire flashlight, except the bulb, will be produced in the Cleveland plant.

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Pennsylvania Pump & Compressor Co., Easton, Pa., has formed a connection with Byer Engineering Associates, Easton, with offices at 136 Liberty street, New York, and 1328 Chestnut street, Philadelphia. The latter company specializes in direct contact condensing and cooling devices, vacuum pumps, gas washing equipment and similar products. Henry E. Byer is head of the company.

EDITORIAL

Swope Plan Worthy of Careful Study

EVERY manufacturer who employs more than 50 workers should read and study carefully the plan of industrial organization proposed last week by Gerard Swope, presiden of the General Electric Co. It is by far the most comprehensive program yet advanced for establishing American industry on a plane of greater stability.

Mr. Swope's plan was outlined in last week's issue. At first glance it seems to have unlimited possibilities for good. To place it in effect would be a tremendous undertaking. Some laws would have to be changed. Many interstate conflicts would have to be ironed out. But above all other considerations is the requirement that the plan must be proved advantageous to three groups—the public, the workers and business.

From the standpoint of labor (excepting some officials of labor organizations who undoubtedly will oppose it on the ground it will make membership in unions less desirable) it offers many advantages. It removes all uncertainty from the hazards of disability, old age and unemployment. It guarantees life insurance. It would enable a worker to go from company to company or industry to industry without endangering credits he had established for pension and insurance.

A Possible Criticism Is That Plan Is Too Paternalistic

With these guarantees, workers would be relieved of practically all worries incident to employment. Is it not possible that the plan goes too far in this direction? Would it not remove the incentive for thrift and self reliance which are valuable in workers everywhere?

From the standpoint of business there is one advantage that looms high above all others. It is the beneficial effect of the plan upon competition. To illustrate this point, let us consider a situation which is typical of present conditions.

Company A and Company B are competitors. Each enjoys the same volume of business. Company A pays $1500 a year in trade association dues. Comany B does not belong to an association, although indirectly it enjoys many of its advantages. Company A participates in a pension plan for its employes. Company B has no pension plan. Company A tries to "carry" its employes during a depression by staggering work and resorting to other expedients. Company B makes no effort to do this; it lays its men off summarily.

In brief Company A spends say $100,000 a year for these various self-imposed burdens while Company B escapes without a cent of this expense. Company A is considered a constructive force in its industry while Company B's influence is known to be destructive. Yet in competition for business Company B enjoys an undeserved advantage of $100,000 less expense.

Under the Swope proposal the unjust premium on enterprise and co-operation existing under present conditions would be redistributed so that all competitors would share the burden of legitimate teamwork equally.

Business Is Justly Suspicious of Supervision by Federal Bureaus

From the standpoint of the public the first impression is that the cost of the elaborate provisions of the plan must necessarily increase the price of the products of industry. Perhaps this question cannot be decided in advance of actual experience. However, it should be remembered that under present conditions the public pays for the adminstration of countless federal, state and local regulatory measures which would be eliminated by the Swope plan. Many costly state disability systems would be wiped out. Moreover, the advantages of stabilization which undoubtedly would result from the proposed plan would more than compensate for any increase in the price of goods that would be incurred.

Chief doubts as to the workability of the plan arise from the well grounded suspicion of government regulatory bodies. Would the supervisory federal bureau proposed by Mr. Swope function any more satisfactorily than the federal trade commission, the interstate commerce commission and other agencies whose work at times has been subject to severe criticism?

It is unwise for anyone to put the stamp of full approval on the plan at this early date. The details—especially those pertaining to pensions and old age and unemployment insurance—should be examined critically by experts to see that they do not contain the elements of danger that were discovered too late in many of the early compensation plans adopted by enterprising concerns in the past.

Nevertheless, the general scope of the proposal is so directly in line with what is needed to stabilize business and its possibilities are so alluring that it should be given the widest possible scrutiny and thoughtful consideration.

THE INDUSTRIAL DIAL

Published in the last issue of each month as part of
The Business Trend Section of STEEL

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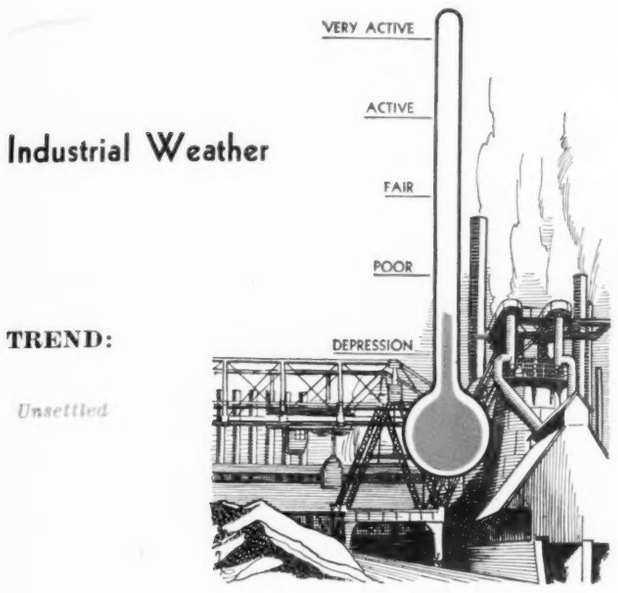
AS THE third quarter draws near to its end there is nothing on the horizon to indicate an early improvement in business. July was a month of disappointments and August was even more productive of gloom because its record shattered the hope held in some quarters that July would prove to be the turning point. And now September, whose days are nearly spent, has failed to supply any worthwhile signs of the expected fall upturn.

Perhaps the outstanding favorable aspect of the situation is the fact that generally business has finally discarded most of its illusions. The widespread appeal for complete liquidation is being heeded and industry is now stripped for action so thoroughly that many companies can make a fair showing on a small volume of business.



Activity

Statistics for August showed that the wheels of industry had slowed down to pace which has not been experienced for many years. Steel ingot output in that month was at the rate of only 31.13 per cent of capacity. Blast furnace operations were equivalent to 28.7 per cent. With only a few exceptions, other industries were operating at a lower rate in August than in July.

Demand

This rate of activity in the steel industry, which is the lowest since 1921, is the result of a dwindling of demand from all of the principal consuming groups. Automobile production was lower in August and the September output will barely equal it, although earlier estimates pointed to a gain in September. The railroads still are backward in purchasing, although car orders were better in August than in several months. Building construction is below normal, but structural awards continue as the brightest note in steel consumption. Pipe line demand has shown signs of improvement but still is uncertain. Barometers of other important consuming industries show similarly depressed activity.

Where Business Stands

Monthly Average, 1930—100

	Aug., 1931	July, 1931	Aug., 1930
Steel Ingot Output	51.9	56.6	92.3
Pig Iron Production	47.8	53.9	94.5
Freight Movement	85.9	83.9	106.3
Building Construction	72.0	79.5	93.9
Automobile Output	65.1	76.3	80.0
Wholesale Prices	78.9	81.8	97.0

Prices

The general trend of prices continues downward although sustained strength has been evident in the case of a few commodities. STEEL'S composite of iron and steel prices has remained almost stationary for six weeks. Copper has dipped again. Bradstreet's index dropped in August, but the bureau of labor statistics' retail food and wholesale commodity barometers in the period from July 15 to Sept. 1 showed a slight rise.

Business Trend Charts of the Month

Production

Steel ingot production	Sept.	17,	p.28
Pig iron production	Sept.	10,	p.37
Blast furnace production rate	Sept.	10,	p.36
Industrial production	Sept.	3,	p.27
Coke production	Sept.	3,	p.29

Demand

Unfilled orders, U. S. Steel Corp.	Sept.	17,	p.27
Railroad car orders	Sept.	17,	p.28
Index of machine tool orders	Sept.	24,	p.29
Building construction	Sept.	24,	p.29
Steel castings	Sept.	3,	p.30
Structural steel sales	Sept.	3,	p.30
Automobile output	Sept.	3,	p.28

Prices

Bradstreet's index	Sept.	17,	p.30
Iron and steel price index	Sept.	24,	p.30
Basic iron—heavy melting steel	Sept.	10,	p.36
Foundry pig iron prices	Sept.	3,	p.28
Iron and steel parity	Sept.	10,	p.37
Building cost index	Sept.	17,	p.30

Miscellaneous

Foreign trade	Sept.	24,	p.30
Freight traffic	Sept.	10,	p.35
Commercial failures	Sept.	17,	p.29
Railroad earnings	Sept.	17,	p.29
Iron and steel foreign trade	Sept.	3,	p.29

Thumb Nail Sketches Of Business

Economy and Taxes

Balancing of the budget—a problem involving drastic measures in the case of several European countries—will soon become a major issue in the United States. For 11 years (from 1920 to 1930 inclusive) the ordinary receipts of the United States government have exceeded the ordinary expenditures. But in the fiscal year of 1931 the income was about three and a third billions as against expenditures of four and a quarter billions. Thus for the first time since the war period the United States is in red.

From now on we will hear a great deal about curtailing government expenses and the levying of taxes equitably. In 1931 of every dollar of ordinary revenue 55 cents came from income taxes, 12 cents was derived from customs receipts, 18 cents from internal revenue and 15 cents from miscellaneous sources.

Wages

Approximately 31 cents of each dollar of gross income received by the larger steel companies goes to workers in the form of salaries and wages chargeable to operations.

Banking

In the early stages of the depression it was said that the ample supply of money would be a helpful factor in righting conditions. Even today money is not scarce, but it is difficult to obtain it for many projects which would have been considered sound several years ago. Large city banks are in a strong position, due largely to their efforts to maintain a high proportion of their funds in liquid state. Local clearing houses have insisted upon stringent control of bank monies. Therefore while the stronger institutions are in a fine position to meet emergencies they are cautious in loaning funds to industry. Doubtless many worthy projects are being held in abeyance as a result of this unusual situation.

Employment Decreases

According to the United States bureau of labor statistics the index of employment in manufacturing industries in August was 70.0 compared with 70.4 in July, a loss of only 0.3 per cent. The decline in the payroll index was 1.1 per cent. In the iron and steel industry the decline in employment was from 65.1 to 63.3 and in payrolls from 47.3 to 45.0.

Agriculture

Experts sem to be unable to appraise the farm situation except in terms of uncertainty. The news from the cotton and wheat districts gives no clue as to the future outlook. However numerous instances are coming to light wherein farmers in the south and in the northwest—by relying less upon cotton or wheat and more on other crops—have worked themselves into positions much more favorable than those of their "one-crop" contemporaries.

Steel Profits

With steel ingot output cut down to an average of 66,000 tons daily or at the rate of 31 per cent of capacity (which prevailed in August) the hope for profits is not bright. Nevertheless operations are scaled down to minimum costs and the financial showing per unit of business probably will be better in the third quarter than it was in the second quarter.

The Barometer of Business

Industrial Indicators

	Aug., 1931	July, 1931	Aug., 1930
Pig iron output (Daily average, tons)	41,201	47,170	81,455
Machine Tool Index	68.9	74.1	110.2
Unfilled orders (tons)	3,169,457	3,404,816	3,580,204
Ingot output (Daily average, tons)	66,133	72,160	117,722
Dodge Bldg., awards in 37 states (sq. ft.)	30,631,200	33,811,700	39,932,500
Automobile output	180,000*	223,181	234,160
Coal output, tons	30,517,000	29,790,000	35,661,000
Business failures; number	1,944	1,983	1,913
Business failures; liabilities	$53,025,132	$60,997,853	$49,800,653
Cement production, Bbls.	13,549,000	13,899,000	17,821,000
Cotton consumption, bales	425,819	450,518	352,335
Car loadings (weekly average)	749,457	736,612	934,366

*Estimated.

Financial Indicators

	Aug., 1931	July, 1931	Aug., 1930
25 Industrial stocks	$190.54	$199.68	$283.05
25 Rail stocks	$58.43	$67.64	$110.58
40 Bonds	$81.73	$83.88	$88.27
Bank clearings (000 omitted)	$28,907,922	$34,333,775	$38,319,925
Commercial paper rate (N. Y., per cent)	2	2	3
*Commercial loans (000 omitted)	$7,845,000	$7,957,000	$8,472,000
Federal Reserve ratio, per cent	79.9	84.3	83.1
**Railroad earnings	$56,534,903	$50,162,553	$83,069,375
Stock sales, N. Y. stock exchange	$24,890,277	$33,539,780	$39,869,500
Bond sales, par value	$188,645,350	$220,730,700	$169,713,700

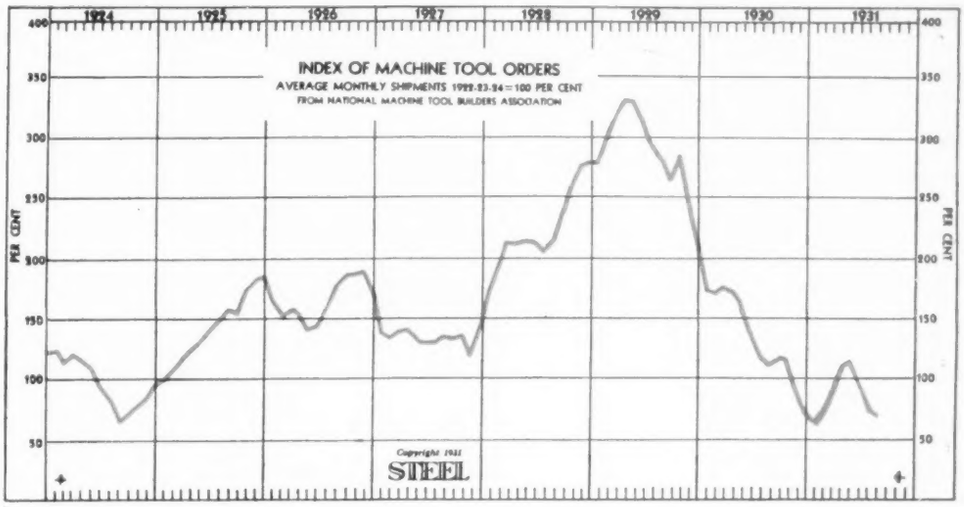
*Leading member banks Federal Reserve System.
**July, June and July, respectively.

Foreign Trade

	Aug., 1931	July, 1931	Aug., 1930
Exports	$165,000,000	$183,000,000	$298,118,000
Imports	166,000,000	175,000,000	218,359,000
Gold exports	39,000	1,009,000	39,332,000
Gold imports	57,539,000	20,497,000	19,714,000

Commodity Prices

	Aug., 1931	July 1931	Aug., 1930	Monthly average, 1913
STEEL's composite average of 14 iron and steel prices	$31.05	$31.05	$32.99	$26.32
Bradstreet's index	$8.49	$8.79	$10.43	100
Wheat, cash (bushel)	49c	69c	$1.06	92c
Corn, cash (bushel)	66c	72c	$1.26	51c
Petroleum, crude (Bbl.)	60c	37c	$1.25	$2.50



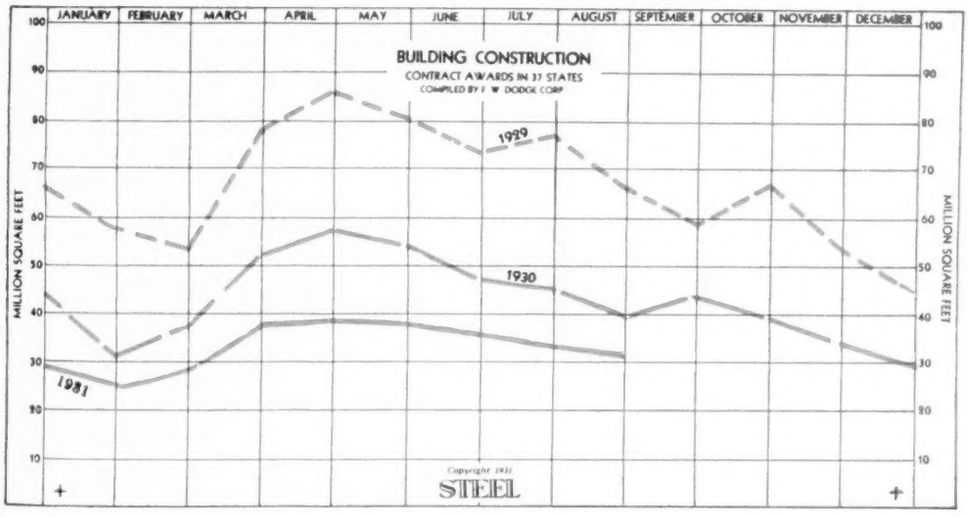
	1931	1930
August	68.9	110.2
July	74.1	117.3
June	88.6	146.7
May	103.3	165.1
April	102.1	176.8
March	89.4	177.8
February	73.1	172.8

Orders for Machine Tools Improve, But Moving Average Declines

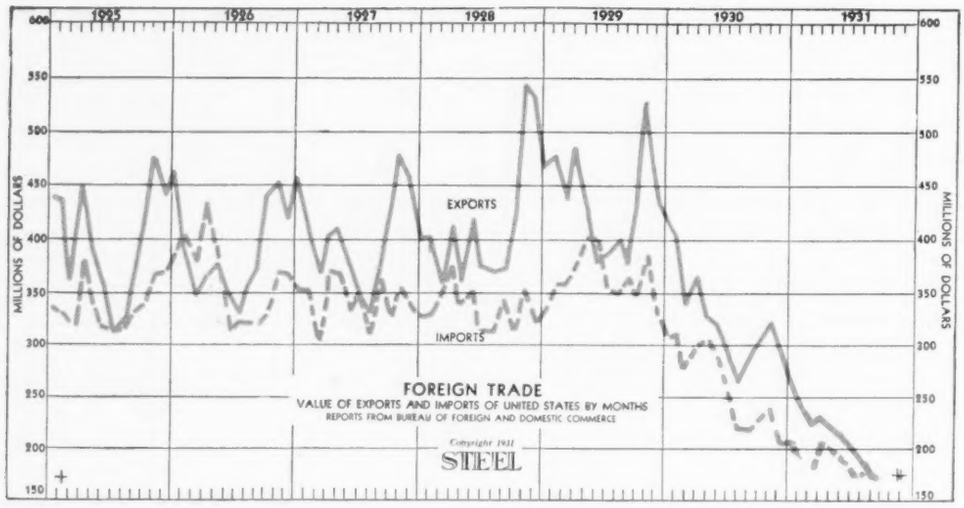
According to the compilation of the National Machine Tool Builders' association, the three months' moving index of gross orders for machine tools dropped from 74.1 in July to 68.9 in August. However the actual monthly index was 71.1 in August as against 61.5 in the preceding month—indicating that only a slight improvement in September will cause an upturn in the moving average index. Should this improvement materialize, the secondary bottom of the year—that of August—will have escaped by a narrow margin the depth of recession registered in January when the index stood at 65.3. Shipments in August were generally heavier than in July, but the index of unfilled orders dropped rather sharply.

Awards for Building Construction in August Are Down Moderately

Building construction as measured by the compilation of the F. W. Dodge Corp. of awards in 37 states in August amounted to 30,631,200 square feet—the lowest since February. The decline from July figures was about 9 per cent. Beginning in January with awards equivalent to about 25,000,000 square feet, the volume rose to a peak of 39,380,300 in April from which point there has been a steady decline. Usually a moderate spurt occurs in the fall, resulting in a secondary peak in October. Last year, however, September was the best month of the autumn, the volume declining steadily in the last quarter. Residential contracts in August amounted to 14,000,000 square feet while the area of industrial awards barely exceeded the million mark.



	Square Feet
Aug., 1931	30,631,200
July, 1931	33,811,700
Aug., 1930	39,932,500



EXPORTS

Aug., 1931	$165,000,000
July, 1931	183,000,000
Aug., 1930	298,118,000

IMPORTS

Aug., 1931	$166,000,000
July, 1931	175,000,000
Aug., 1930	218,359,000

Foreign Trade in August Is Lower; Influx of Gold Continues

America's foreign trade in August, when exports and imports were 44 and 24 per cent, respectively, below 1930 figures, reflects the sorry plight of foreign countries which usually account for a large share of our foreign trade. In a normal year exports in August show a slight improvement over July, but this year August exports were $165,000,000 against $183,000,000 in July—a decline of 9 per cent. Imports at $166,000,000 in August as compared with $175,000,000 in July, were greater than exports—an unusual situation. The flow of gold to the United States continues at a time when other countries need it imperatively and this country is burdened by its oversupply.

Iron and Steel Price Index Holds Steady As Commodity Prices Slip

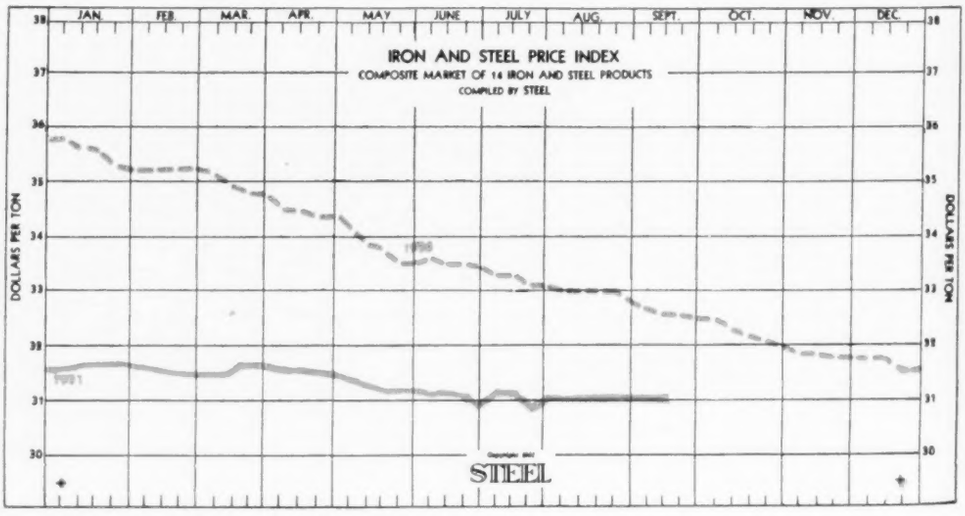
At a time when commodity prices are declining gradually or exhibiting signs of uncertainty, steel and iron prices are conspicuous in their stability. While slight fluctuations in a few steel products are taking place all of the time, in general the price structure has remained practically stationary for three months. The average in June was $31.02, in July and August it was $31.05 and in September about $31.04. The composite held at $31.04 for four weeks and then eased one cent to $31.03 as of Sept. 16. The price trend of the immediate future will be influenced by the industry's wage policy and by early autumn developments in the demand for steel.

Monthly Averages

August	$31.05
July	31.05
June	31.02
May	31.37

Weekly Index

Sept. 16.	$31.03
Sept. 9	31.04
Sept. 2	31.04
Aug. 26	31.04
Aug. 19	31.04
Aug. 12	31.06



Abusive Heat Treating or Grinding Causes Cracks in Hardened Steel

BY C. E. SWEETSER
Norton Co., Worcester, Mass.

OCCURRENCE of cracks in the ground surfaces of hardened steels under seemingly normal conditions of manufacture not only results in considerable loss due to spoiled work but also presents the questions of cause and prevention. It generally is conceded that hardened steels may be cracked either by heat treatment or by grinding. The real problem is to distinguish between these two causes

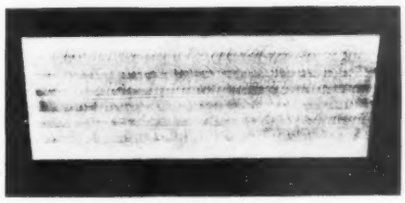


Fig. 1—High-speed steel, heat treated correctly, but burned dark blue by grinding

Opinions in the past given in reply to inquiries were admittedly uncertain as they were based chiefly on the number, size, form, and location of cracks. For this reason a test recently was conducted to obtain information of a more definite nature. It was hoped that such information definitely would identify cracks which appear in the ground surfaces of hardened steels with their causes. This article reports and discusses the results of the test.

The method employed included dry, precision, surface grinding on two or more pieces of each of three typical tool and die steels. One piece of each steel was heat treated according to the makers' recommendations while the remaining pieces were heat treated by following procedures intended to produce much greater strain or brittleness. The steel pieces then were ground in successive operations which subjected them to increasingly severe conditions of grinding heat until all were cracked. Careful examinations for cracks were made by etching before and after heat treatment and after each grinding operation. The severity of grinding conditions to cause cracking and the number, size form, and location of cracks were recorded for each sample tested.

The following conclusions are drawn from results that were definitely consistent throughout the range of comparisons included in the test. Although derived from trials with only three kinds of steel and one type of

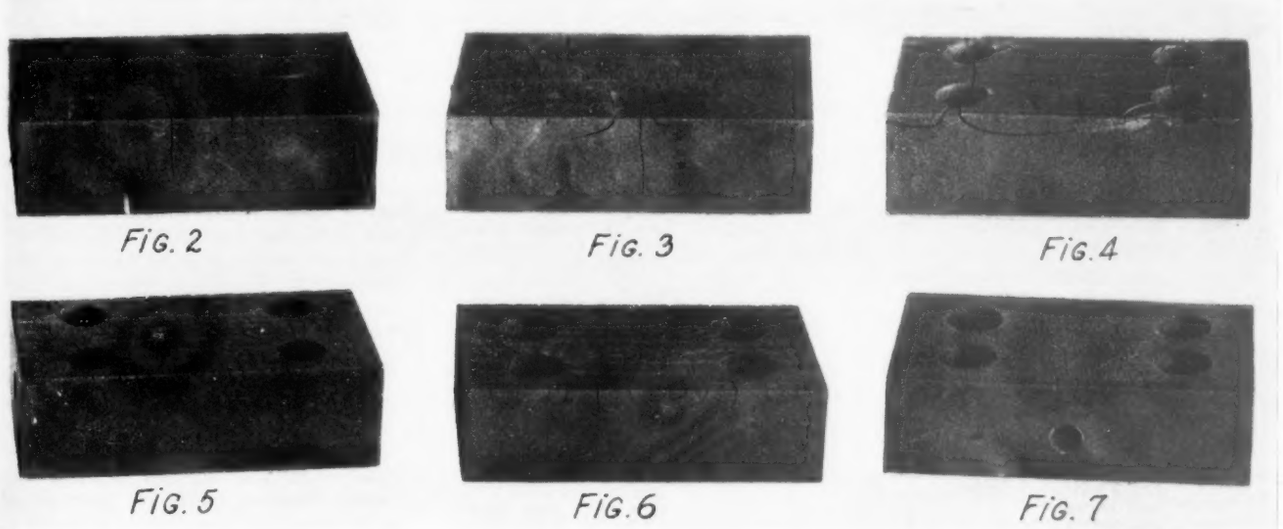


FIG. 2—High speed steel quenched correctly, not drawn, burned light straw by grinding. Fig. 3—High-speed steel, soaked at correct quenching heat, not drawn, burned light straw by grinding. Fig. 4—Tungsten-chrome die steel, overheated for quenching, not drawn, burned blue by grinding. Fig. 5—Tungsten-chrome die steel heat treated correctly, burned dark blue by grinding. Fig. 6—Carbon-chrome die steel, overheated for quenching, not drawn burned blue by grinding. Fig. 7—Carbon-chrome die steel, heat treated correctly, burned blue by grinding

Table 1

Kind of Steel	Ingredients: Carbon	Tungsten	Chromium	Hardening Temp. Fahr.	Drawing Temp. Fahr.
High speed	.70%	18.0%	4.0%	2250-2400	1000-1150
Oil-hardening tungsten chrome	.85	.50	1.55	1500-1550	400-600
High carbon high chrome	2.35	1.0	10.5	1700-1750	500-850

◆ ◆ ◆

Table 2

Sample	Quenching Temp. Fahr.	Drawing Temp. Fahr.	Rockwell Hardness	Remarks
High speed 15/16 *x* 1⅝ *x* 2⅞*-inch pieces*				
No. 1-1	2350	1050	C64	Correctly heat treated
No. 3-2	2350		C65	Not drawn
No. 3-3	2350		C65	At quenching temperature, twenty min., not drawn
Tungsten Chrome 1 *x* 1½ *x* 3*-inch pieces*				
No. 1-1	1520	400	C60	Correctly heat treated
No. 1-2	1520		C60	Not drawn
No. 1-3	1650		C63	Holes in corners*, overheated, not drawn
No. 2-3	1520	400	C61	Holes in corners*, correctly heat treated
Carbon chrome 15/16 *x* 1½ *x* 3*-inch pieces*				
No. 1-1	1725	500	C60	Correctly heat treated
No. 1-2			C65	Not drawn
No. 1-3	1850		C65	Holes in corners*, overheated 125, not drawn
No. 2-3	1775	500	C60	Holes in corners*, correctly heat treated

*Holes were drilled near the corners of the tungsten chrome and carbon chrome steel pieces No. 1-3 and No. 2-3 in order that greater strain might be created in quenching.

◆ ◆ ◆

Table 3

Sample	Heat Treatment	Wheel to Cause Cracking*	Degree of Burning	Feed Cross Inches	Feed Vert. Inches	Description of Cracks
High speed No. 1-1	Correctly hardened, and drawn	3846-K vitrified	Dark blue	0.2	.0005	Very fine checkerwork not over .005-inch deep. See Fig. 1.
No. 3-2	Correctly hardened, not drawn,	3846-I	Light straw	0.1	.0005	Few, wide and deep; one through sample. See Fig. 2.
No. 3-3	Soaked at hardening heat, not drawn	3846-I silicate	Light straw	0.1	.0005	Coarse surface net work, also wide cracks through sample. See Fig. 3.
Tungsten chrome No. 1-1	Correctly hardened, and drawn	3846-K vitrified	Dark blue	0.2	.0005	Wide, 3/16-inch deep; less in number than with tungsten chrome No. 2-3.
No. 1-2	Correctly hardened, not drawn	3846-J silicate	Dark straw	0.2	.0005	Few, medium width, not over 1/16-inch deep, network.
No. 1-3	Overheated 125 degrees Fahr., not drawn (holes)	3846-K vitrified	Blue	0.2	.001	Few, very wide, ¼-inch deep areas badly displaced. See Fig. 4.
No. 2-3	Correctly hardened, and drawn (holes)	3846-K vitrified	Blue	0.2	.001	Many fine surface cracks, not over 1/16 cracks, not over 1/16-inch deep. See Fig. 5.

*All pieces were first ground without cracking.

grinding operation, they are, with few exceptions, considered as being applicable to other steels and to various other grinding operations as well.

A conclusion on which the results of this test place significant emphasis is that cracks which appear in the ground surfaces of hardened steels should not be termed as being caused by heat treatment or grinding They actually are caused by distinctly abusive heat treatment, abusive grinding, or a combination of these two conditions, although not existing before the grinding operation. Results of the test indicate that in the majority of cases a combination of these two conditions is involved.

A comparatively severe degree of grinding abuse is required to crack steel which has been correctly heat treated. On the other hand, steels which have been subjected to extremely severe heat treatment may be cracked with little, if any, abuse by grinding. Between these two extremes there is a range of possible combinations of abuse by heat treatment and grinding that may cause cracking.

Cracks may be identified with their causes by observing their size, form, number, and location after etching. Those which are few in number and comparatively wide and deep (see Fig. 2) point to abusive heat treatment as the predominating cause. Cracks which occur in the form of a fine surface network (see Fig. 1) indicate correct heat treatment and decidedly abusive grinding as plainly shown.

Three Typical Steels

The three typical tool and die steels used in these comparisons are designated here as follows: High-speed, tungsten-chrome, and carbon-chrome steels. The tungsten-chrome steel is described by its producers as being a comparatively dense non-deforming die steel. The carbon-chrome steel is termed as a high carbon, high chrome die material that is tough and has a high resistance to abrasion. Table I lists the percentages of important ingredients and hardening and drawing recommendations as supplied by the makers.

Oil is recommended by the makers as a quenching medium for each of these steels. The range of drawing temperatures was given for use, depending on the desired hardness and toughness. Hardness decreases and toughness increases with the drawing temperature. Drawing was included in the recommendations for the heat treatment of each of these materials.

The steels listed were received as lengths of soft bar stock and the desired number of pieces cut from these. The scale and surface defects then were removed from all surfaces of each piece by grinding to a depth of approximately 1/16-inch with a rotary surface grinder. A soft, free-cutting wheel, namely, a 1946-G, aluminum oxide, silicate-bonded wheel, was used with a heavy flow of coolant. All

samples then were etched in a boiling solution of sulphuric acid and water for fifteen minutes and carefully examined for cracks and seams. This procedure for removal of scale and examination for cracks was repeated after heat treatment. When finally prepared for grinding comparisons each sample was tested for degree and uniformity of hardness by taking four readings on each side of each piece with the Rockwell hardness tester.

Table 2 gives data concerning the heat treatment of each sample listed in the final tabulation of results.

Check results were secured on duplicates of many specimens listed in Tables 2, 3 and 4 but are omitted.

All high-speed steel pieces were preheated in an electric furnace for thirty minutes. They then were transferred to a gas-fired furnace and heated to 2350 degrees Fahr. in twenty minutes for quenching. The tungsten-chrome and carbon-chrome samples were preheated for twenty minutes and then heated to their respective hardening temperatures in a gas-fired furnace in twenty minutes.

All hardening or quenching temperatures were checked with indicating pyrometers. All drawing temperatures were obtained with a special electric drawing furnace equipped with a recording pyrometer. The carbon-chrome steel was cooled in oil after drawing while air cooling was employed with the high-speed and tungsten-chrome steels. By comparison with Table 1 it will be seen that the drawing temperatures listed in Table 2 were selected to give comparatively hard, brittle samples.

Dry, precision, surface grinding comparisons were conducted on a tool and cutter grinder under the following conditions:

Kind of grinding .....Dry, with peripheries of 8 x ½-inch steel
Wheel speed....4500 surface feet per minute
Traverse .....120 inches per minute
Cross feed.....0.1 or 0.2-inch per pass
Vertical feed....0.0005 or 0.001-inch for each completed cross feed
Total feed per run....0.015-inch vertical feed
Dressing.....Diamond, 0.0005-inch feed per pass

The sample blocks of steel were held flat on a magnetic chuck and ground as they were traversed under the wheel. Each piece first was ground with a 3846-H silicate wheel and then with successively harder wheels until etching revealed cracks. The samples were etched and examined for cracks after each run. The cross feed of 0.2-inch per pass and the vertical feed of 0.001-inch were used to obtain a more severe degree of burning with the 3846-K vitrified wheel. Wheel action was observed by noting finish, wheel wear, and discoloration due to burning. Wheel wear was measured as the difference between the total feed and the reduction in the height of the work.

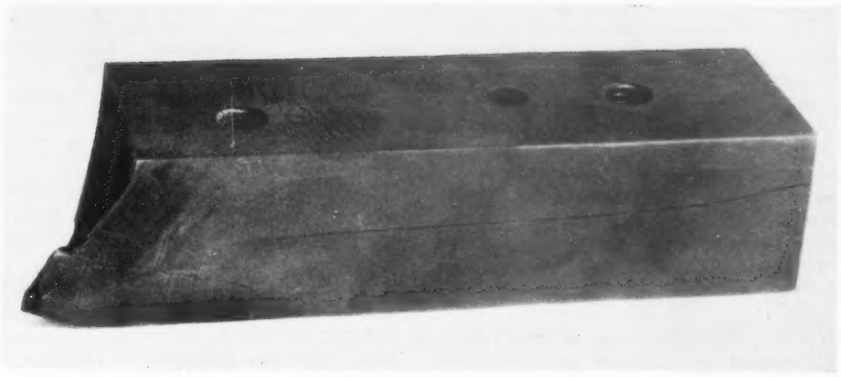


Fig. 8—Cracks in the side were caused by heat treatment; finer cracks in the upper surface were caused later by abusive grinding

Fig. 9—Grinding abuse is shown by surface network of shallow cracks; abusive heat treatment is shown by wider and deeper cracks

Tables 3 and 4, give the heat treatment and the grinding conditions required to cause cracking, as well as a description of cracks for each sample. Each set of grinding conditions specified was the mildest to cause observed cracking. Identification of the test samples shown in the accompanying illustrations is supplied by the figure numbers 1 to 7 inclusive, given under the column headed, "Description of Cracks."

In comparing results given in the Table 4, it will be noted that degree of burn varied with the extent of feed and the hardness of the wheels used. In this connection it should be remembered that vitrified wheels usually act about one or two grades harder than corresponding silicate wheels of the same assigned grade.

Conclusions Indicated

The results given in the following statements were definitely consistent in the majority of comparisons included in the test:

1. Samples which were heat treated in a manner to create excessive brittleness or strain cracked under noticeably less severe conditions of grinding than did those which were heat treated to produce a minimum brittleness or strain.

2. Cracks in the strained or brittle samples were comparatively few in number and wide and deep. They frequently extended entirely through the pieces and displaced sections of the surfaces. On the other hand, cracks which were caused by the grinding of pieces which were strained or made brittle to a lesser degree were found to be finer and shallower and more in the form of a surface network.

3. All pieces were ground successfully before grinding conditions were employed to cause cracking.

4. Cracking did not occur in any of

Table 4

Sample	*Heat Treatment*	*Wheel to Cause Cracking**	*Degree of Burning*	*Feed Cross inches*	*Feed Vert. inches*	*Description of Cracks*
Carbon chrome No. 1-1	Correctly hardened, and drawn	3846-K vitrified	Dark blue	0.2	.0005	Several straight, wide, shallow cracks like seams.
No. 1-2	Correctly hardened, not drawn	3846-J silicate	Dark straw	0.2	.0005	Network, wide not over 1/16-inch deep.
No. 1-3	Overheated 125 degrees Fahr., not drawn (holes)	3846-K vitrified	blue	0.2	.001	Network, wide not over ¼-inch deep. See Fig. 6.
No. 2-3	Correctly hardened, and drawn (holes)	3846-K vitrified	blue	0.2	.001	Fine checkerwork, not over 1/32-inch deep. See Fig. 7.

*All pieces were first ground without cracking.

the trials reported here until the heat generated by grinding was sufficient or more than sufficient to cause a discoloration due to burning.

5. Grinding conditions which caused cracking were, with few exceptions, objectionable for other reasons such as warpage of the work due to heat and the building up of excessive pressure between wheel and work because of the inability of the glazed wheel to cut at the rate of speed imposed upon it.

6. A noticeable variation was found concerning the manner in which the different steels responded to the various conditions of heat treatment and grinding with respect to cracking. This sensitivity evidently depends upon the physical properties of the steels, which were due to their principal ingredients. The high-speed steel cracked most easily and caused the least wheel wear, while the carbon-chrome steel showed the least tendency to crack and caused the greatest amount of wheel wear. General grinding experience has shown that wheel wear usually varies indirectly with the brittleness of steels. Only small differences were found in the Rockwell hardnesses of the three steels used.

The results Number 1 and 2 above evidently will hold true for all conditions of abusive heat treatment and grinding.

The information given in the statements Number 3, 4, and 5 emphasizes the importance of grinding in connection with the problem. It should be noted, however, that as stated, these results are dependent on the degree of abusive heat treatment involved, and therefore may not hold true in all cases.

Abusive heat treatment is defined as heat treatment which produces either excessive strain or brittleness. These conditions may result from manner and degree of heating, method of quenching, quenching medium, or omission of drawing. Complete instructions for the correct heat treatment of tool or die steel pieces in common shapes and sizes usually are supplied by steel producers. The omission of, or insufficient drawing is a common fault with this type of work. In some instances large dies and tool steel pieces of complicated shapes with narrow sections are strained excessively or even cracked, with the best known methods of heat treatment. This class of work will, of course, require more than ordinary care in grinding. In extreme cases it is possible that cracking will occur in spite of special precautions.

The term "abusive grinding," as employed here includes the generation of excessive heat by heavy feeds or by the action of a glazed or dull wheel. Glazing may result from the use of a wheel that is too hard or from the use of machine conditions that may cause a wheel to act hard. Noticeable surface discoloration is a danger signal indicating the approach of, or an actual condition of, abusive grinding.

Calendar of Coming Conventions

Sept. 28-30—Concrete Reinforcing Steel institute. Semiannual convention, Buckwood Inn, Shawnee-on-Delaware, Pa. M. A. Beeman, 2112 Tribune Tower, Chicago, is secretary.

Oct. 6-9—National Association of Ornamental Iron, Bronze and Wire Manufacturers. Twenty-fourth annual convention at Hotel Statler, Detroit. M. L. Soper, 1331 G street N. W., Washington, is assistant secretary.

Oct. 7-8—Society of Automotive Engineers. Production meeting at Book-Cadillac hotel, Detroit. John A. C. Warner, 29 West Thirty-ninth street, New York, is secretary.

Oct. 8-9—American Refractories institute. Fall meeting at Hotel Cleveland, Cleveland. Dorothy A. Texter, 2218 Oliver building, Pittsburgh,, is secretary.

Oct. 12-14—Institute of Scrap Iron and Steel. Semiannual conference in Pittsburgh. Benjamin Schwartz 11 West Forty-second street, New York, is director general.

Oct. 12-16—American Gas association. Thirteenth annual convention and exhibition, in Atlantic City, N. J. K. R. Boyes, 420 Lexington avenue, New York, is secretary.

Oct. 12-16—National Safety council. Twentieth annual safety congress at Hotel Stevens, Chicago. W. H. Cameron, 200 North Wacker drive, Chicago, is managing director.

Oct. 14-16—Society of Industrial Engineers. Annual meeting in Pittsburgh. George C. Dent, 205 West Wacker drive, Chicago, is secretary.

Oct. 15-16—Gray Iron institute. Fourth annual convention at West Baden Springs hotel, West Baden Springs, Ind. Arthur J. Tuscany, Terminal Tower building, Cleveland, is manager.

Oct. 15-17—American Gear Manufacturer's association. Semiannual meeting at William Penn hotel, Pittsburgh. T. W. Owen, 3608 Euclid avenue, Cleveland, is secretary.

Oct. 19-22—National Hardware Association of the United States. Annual convention at Palmer House, Chicago. George A. Fernley, 505 Arch street, Philadelphia, is secretary.

Oct. 19-22 — American Hardware Manufacturers' association. Annual convention at Palmer House, Chicago. Charles F. Rockwell, 342 Madison avenue, New York, is secretary.

Oct. 21-23—American Management association. Industrial marketing conference at Hotel Statler, Cleveland. W. J. Donald, 20 Vesey street, New York, is managing director.

Oct. 21-23—National Association of Farm Equipment Manufacturers. Annual meeting at Congress hotel, Chicago. H. J. Sameit, 608 South Dearborn street, Chicago, is secretary.

Oct. 22—Steel Founders' Society of America. Meeting in New York, G. P. Rogers, 932 Graybar building, New York, is managing director.

Oct. 23—American Iron and Steel institute. Fall meeting at Hotel Commodore, New York. H. H. Cook, 75 West street, New York, is assistant secretary.

Oct. 27-31—American Institute of Steel Construction. Ninth annual convention at Greenbrier hotel, White Sulphur Springs, W. Va. Charles F. Abbott, 200 Madison avenue, New York, is executive director.

British Iron and Steel Institute To Meet

The Iron and Steel institute will conduct its autumn meeting at the Royal Metal Exchange, Swansea, Wales, Sept. 29-Oct. 2. A total of 13 technical papers are scheduled for presentation, among them being the following:

"Alloys of Iron Research—Part X—Chromium-Iron Constitutional Diagram," by F. Adcock.

"The Diffusion of Tin Into Iron with Special Reference to the Formation of Columnar Crystals," by C. O. Bannister and W. D. Jones.

"The Structure of Nodular Troostite," by N. T. Belaiew.

"Effect of Molybdenum on Medium-Carbon Steels Containing 1 to 2.5 Per Cent Manganese," by G. Burns.

"Production Economy in Iron and Steel Works—Part II-Costs of Production," by O. Cromberg.

"Surface Hardening by Nitrogen of Special Aluminum - Chromium - Molybdenum Steel on a Production Basis," by W. H. Cunningham and J. S. Ashbury.

"Constitution of Iron-Tin Alloys," by C. A. Edwards and A. Preece.

"Effect of Surface Conditions Produced by Heat Treatment on the Fatigue Resistance of Spring Steels," by G. A. Hankins and M. L. Becker.

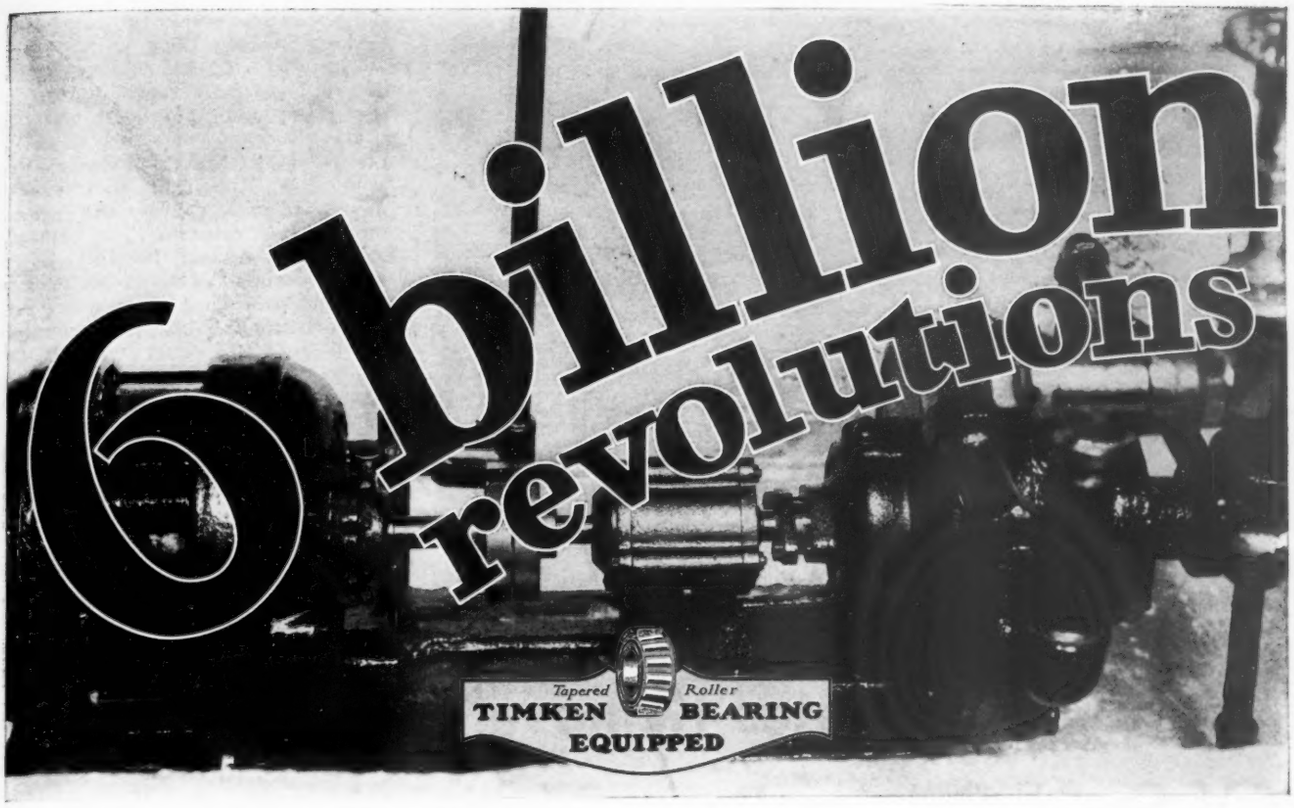
"Influence of Silicon on Nickel Steel," by R. Harrison.

"Mottled Tinplates," by J. C. Jones.

"Solidification and Crystallization of Steel Ingots—Influence of Casting Temperature and Undercooling Capacity of the Steel," by B. Matuschka.

"A Critical Study of the Origin of the Banded Structure of a Hot-Worked Hypoeutectoid Steel," by F. C. Thompson and R. Willows.

Following this meeting joint meeting with local societies will be held. G. C. Lloyd, 28 Victoria street, London, S.W. 1, is secretary of the institute.



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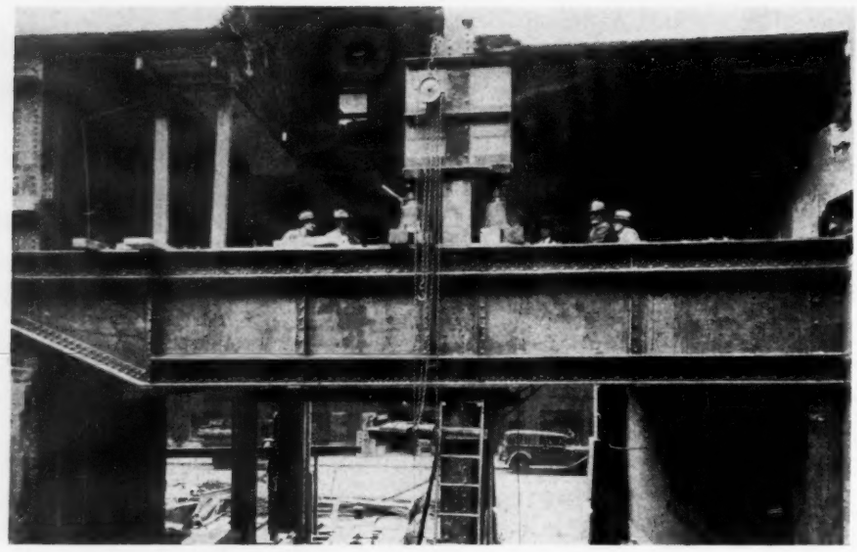


Load being transferred from column to new girder by 100-ton hydraulic jacks, preparatory to cutting away lower portion of the column

Welding Facilitates Removal Of Steel Column Base

BY FRANK P. McKIBBEN
Consulting Engineer, Black Gap, Pa.

WIDENING of an existing driveway leading from a street to an interior open court at the 14-story office building of E. I. duPont de Nemours & Co. Inc., Wilmington, Del., necessitated the removal from one of the main steel supporting columns of that part extending from the driveway or ground level to the first floor. This was accomplished by an unusual adaptation of welding and cutting work.

As this column supported not only the first floor, but the roof as well as the second to thirteenth floors, partitions and walls above it, some means of giving proper support for the upper part of the column was required. Furthermore since many of the offices bordered the open court, noise was objectionable; hence welding was the method selected. Caution was essential to prevent settling of the structure when the lower section of the column was removed and a new support attached for the remainder, since such settling would have resulted in cracked floors, walls and partitions.

The problem was solved by inserting into the existing structure a double plate girder with two webs in such a manner that the one web was placed on either side of the column, with one end of the girder supported by a new column while the other end was attached to an old column. The girder was welded to these two supporting columns. Some short steel I-beams to serve as bearing brackets for hydraulic jacks then were welded to the old main column a few feet above the girder. At this stage although the girder webs were adjacent to and on either side of the old main column, no connection existed between them.

The next step lay in placing two 100-ton hydraulic jacks on top of the girder and underneath the two bearing brackets, as shown in the illustration, so that as pressure was applied to the jacks they pushed downward on the girder and upward on the main column. This pressure was increased until the total downward movement of the girder reached ¼-inch, at which time the pressure upon it amounted to approximately 460,000 pounds, equal to the weight of floors, walls, partition, roof, in fact, the entire dead load which the column supported and brought to the girder. In this manner the load was removed from that part of the main column which extended from the girder to the driveway floor level, and transferred to the girder.

Then the column was welded to the girder webs with the electric arc, after which the lower section of the column was removed by cutting it off with an oxyacetylene torch just below the girder and also just below the driveway level. The driveway was then clear; the column was removed; no subsidence occurred in the building; and welding eliminated much noise.

The DuPont company's engineering department designed the steel. Belmont Iron Works, Philadelphia, fabricated and erected the steel which was field-welded by Mellon, Taylor. Hendrickson Inc. Carson & Carson and the writer were consulting engineers on the welding.

THE accompanying article, describing an interesting application of welding in the removal of the lower portion of a main supporting column of a 14-story building, is based on a paper, "Welding Solves Another Problem", which Mr. McKibben presented at a meeting of the American Welding society during the National Metal Congress in Boston this week.

High-Carbon Steels Show Wear Resistance

One of the major factors which causes deterioration of metals in service is wear. The cost of worn-out parts, the labor of replacement, and the time lost while repairing machinery amount to a sizeable economic loss.

The selection, on the basis of laboratory tests, of those metals or alloys which best resist wear is extremely difficult because of the many complex factors involved. The bureau of standards recently has completed a study of one special phase of this work, and a report will be published in the September issue of the bureau of standards *Journal of Research*. Tests of the wear resistance of plain carbon steels were made in the Amsler machine (combined rolling and sliding friction under heavy pressures) to determine the effect of carbon content and heat treatment upon the wear resistance of these particular steels. The results of these tests disclosed that the higher carbon and the harder steels were more resistant to the particular type of wear studied than were the lower carbon and the softer steels.

Opens Plant in Detroit To Demonstrate Nitriding

NEED for a demonstration nitriding plant in the Detroit district to give manufacturers an opportunity to investigate the process more thoroughly has resulted in the recent establishment of such facilities, according to the Nitralloy Corp. in providing these facilities are which owns or controls various patents for the process, including furnace equipment and composition of alloy steels and cast irons.

Co-operating with the Nitralloy Corp. in providing these facilities are the Electric Furnace Co., Salem, O., which holds a furnace license from the corporation, and the Commercial Steel Treating Co., 6100 Tireman avenue, Detroit. The installation, now operating, is located in the latter company's plant.

Three Nitriding Boxes

The furnace, a late design of the Electric Furnace Co., is of the electrically-heated, semicontinuous, horizontal type with three nitriding boxes having forced gas circulation. The largest box is 60 x 18 x 18 inches; the two smaller, 19½ x 18 x 18 inches. It will be possible to make runs on different time cycles in the two smaller boxes simultaneously and to accommodate a variety of sizes and shapes.

The Nitralloy Corp. already has eight accredited nitriding agents operating in strategic locations as follows:

Arrowhead Steel Products Co., Minneapolis.
Camden Forge Co., Camden, N. J.
W. S. Bidle Co., Cleveland.
Lakeside Steel Improvement Co., Cleveland.
Lindberg Steel Treating Co., Chicago.
New England Metallurgical Corp., South Boston, Mass.
Queen City Steel Treating Co., Cincinnati.
Wesley Steel Treating Co., Milwaukee.

The following companies are licensed to produce nitralloy steel:

Bethlehem Steel Co., Bethlehem, Pa.
Crucible Steel Co., of America, New York.
Firth-Sterling Steel Co., McKeesport, Pa.
Ludlum Steel Co., Watervliet, N. Y.
Vanadium-Alloys Steel Co., Pittsburgh.

Nitralloy steel casting manufacturers are licensed as follows:

Duquesne Steel Foundry Co., Pittsburgh.
Electric Steel & Mfg. Co., Los Angeles.
Empire Steel Castings Co., Reading, Pa.
Milwaukee Steel Foundry Co., Milwaukee.
Warman Steel Castings Co., Los Angeles.
Massillon Steel Castings Co., Massillon, O.

Two companies are licensed to manufacture furnaces suitable for nitriding:

Leeds & Northrup Co., Philadelphia.
Electric Furnace Co., Salem, O.

The technical staff of the Nitralloy Corp. is headed by Dr. Victor O. Homerberg, assistant professor of physical metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., as technical director. He is assisted by Dr. J. P. Walstead, Mr. Bannon and John P. Larkin, metallurgist, who, as well as the various plant metallurgists, are engaged actively in control and development work on nitralloy.

Dry Press Process on Refractories Program

Announcement has been made of the program arranged for the regular fall meeting of the American Refractories institute, to be held Oct. 8-9 at Hotel Cleveland, Cleveland. Committee meetings will occupy the time for the first day of the meeting with the following technical papers scheduled for the second day:

"Dry Press Operations," by D. B. Hendryx, chief engineer, Harbison-Walker Refractories Co., Pittsburgh.
"Improving Dry Press Brick by the Removal of Air," by Dr. George A. Bole, research professor, engineering experiment station, Ohio State university, Columbus, O.
"The Effect of Various Factors on Pressure Transmission in Dry Pressing," by Prof. C. M. Dodd, secretary of the committee on dry press process, Rolla School of Mines, Rolla, Mo.
"Notes on Firing of Refractories," by S. M. Kier, vice president, General Refractories Co., Philadelphia.
"Permeability of Refractories to Gas at High Temperatures," by Stuart M. Phelps, director refractories fellowship, Mellon Institute of Industrial Research, Pittsburgh.
Open session and discussion on firing refractories, causes of kiln marking and secondary expansion.

British Metals Institute Meets in Switzerland

More than 200 members from 15 countries attended the twenty-fourth autumn meeting of the Institute of Metals in Zurich, Switzerland, Sept. 13-15, with the Swiss Association for Testing Materials as host.

A feature of the meeting was the tenth autumn lecture on "Thin Films in Relation to Corrosion Problems," by Ulick R. Evans, Cambridge university, Cambridge, England.

At the conclusion of the meeting, the members made a series of short tours in Switzerland, visiting the Rigi, Lucerne, Interlaken, Thun, Chippis-Siders and Bienne. Before returning home, a party proceeded to Milan for the International Foundry exhibition and congress.

GASOLINE TANKS SERVE AS OWN DRAFT MEMBERS

One of three semitrailer truck tanks recently placed in service in Los Angeles by Rio Grande Oil Co., being first units built for use on Pacific Coast since California legislature legalized this type of equipment. With the tank carrying 3000 gallons of gasoline, the unit weighs 38,380 pounds fully loaded. Total allowable weight was 39,000 pounds and the problem of maintaining steel construction and obtaining 3000-gallon capacity was a close engineering problem. It was solved by engineers of the Columbian Steel Tank Co., Kansas City, by using the tank as its own draft member, eliminating the drop frame and mounting the semitrailer directly to the rear wheel suspension shackles. This also permitted an unusually low mounting and resultant higher speeds with safety

The OPERATION is as SIMPLE as . .

A One turn of a pointer and the machine is set for the desired current.

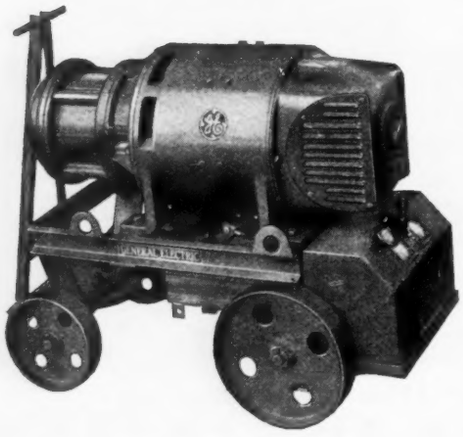
B One turn of a wheel and the machine is set for the desired voltage.

C That's all. The operator is then free to give his entire time and thought to the work.

THE NEW G-E ARC WELDER

Combines and excels all the best features of all the good welders now on the market... plus new features all its own.

1. Stable, flexible arc
2. Quick recovery ("pep")
3. Self-excitation
4. Spark-free commutation
5. Simple operation
6. Duplex voltage control
7. Dead-front control panel
8. Large, protected instruments
9. Light, compact, strong construction
10. Low center of gravity
11. A definite purpose for every ounce of material



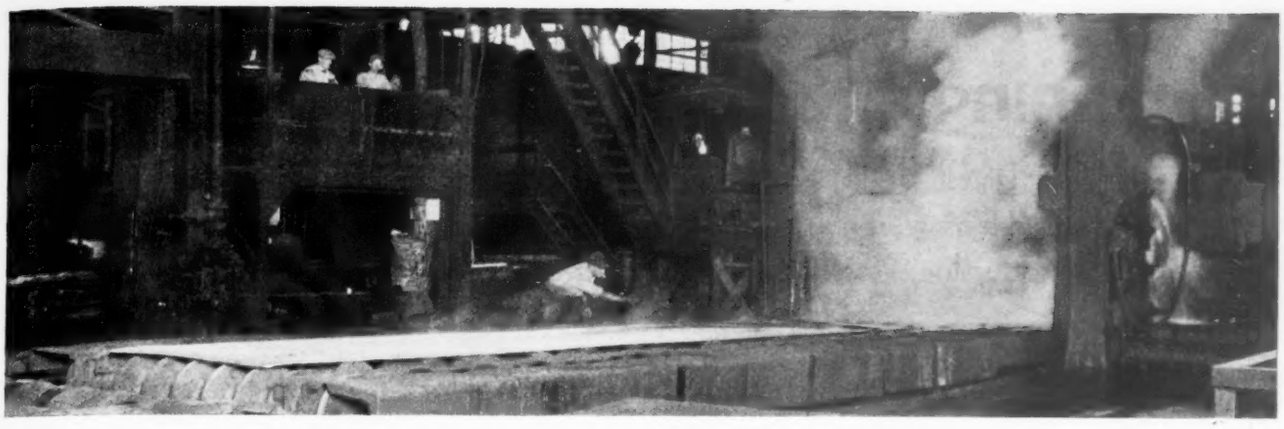
"Easy to get the heat you want" says the operator, smiling. And a satisfied operator means better welding.

Before buying any arc-welding set, investigate this advanced machine which bears the G-E monogram. Immediate shipment can be made from any of 20 G-E warehouses throughout the country. Ask your nearest G-E office.

530-113

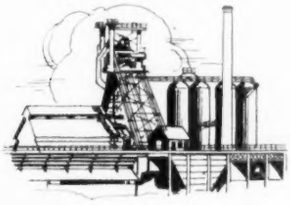
GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES



PROGRESS IN STEELMAKING

A NOVEL means for controlling the temperature of high-carbon and alloy steel rods in the mill, on the reel and in the conveyor has been devised. The rod at full mill speed is heat treated continuously as it passes through appliances in which the pressure and volume of cooling water is controlled. The treatment follows a definite schedule which conforms to the chemical composition of the rods and their use.



THE saving in blast furnace gas used on hot blast stoves is an important item in the economy of producing pig iron, especially since its value for melting and heating now is fully realized. In open-hearth practice it is mixed with coke-oven gas in various proportions suiting the period of the heat. By using a small portion of blast furnace gas during the melting period and regenerating in the mixture, according to the practice at one open hearth department, a tremendous heat effect is attained, whereas during the finishing period the blast furnace gas used almost by itself gives a mellow flame and mild heat, producing the most ideal conditions for refining the bath.

♦ ♦ ♦

A sheet plant has a new roller furnace for heating sheet packs. As the rollers are set in motion to let a heated pack out at the discharge end, the next pack is prevented from following the first out of the furnace by the action of a photoelectric cell. This pack cuts off a beam of light which comes through a hole in the bottom of the furnace and the motion of the rollers automatically is stopped.

♦ ♦ ♦

Chrome brick is replacing magnesite brick at many open-hearth plants in the making of furnace bottoms.

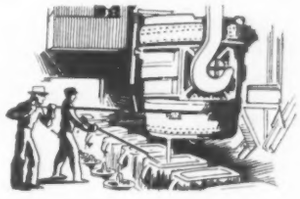
♦ ♦ ♦

About five years ago practically every sheet mill in this country disposed of considerable tonnage of "mill warmer" sheets. This by-product originated at the beginning of the week when crop ends of sheet bars were run through the pair furnaces and served to the various stands for the purpose of heating up the rolls near their centers to working temperatures to enable wider sheets to be rolled. The tonnage of mill warmer sheets in recent years has been decreasing gradually until at present little tonnage is encountered in the market. With over 300 electric roll heaters in the possession of the sheet industry in this country little wonder that the term "mill warmers" has passed into discard. Just another illustration of what happens when an industry passes through a period of transition.

A NEW use has been developed by British metallurgists for strontium carbonate, known as Strontianite, and efforts are being made to interest American metallurgists. The material is being employed to desulphurize open-hearth heats and is added to the furnace about 30 minutes after the first portion of the charge has been melted. It is essential that the bath be at a high temperature. A small addition of the mineral will reduce the sulphur content 0.2 per cent if it is over 0.3 per cent, it is claimed, and the higher the sulphur the more intense the action.

♦ ♦ ♦

Many wire mills in this country are using electric butt welding machines to join the ends of coils and thus permit of continuous drawing operations.



OVER 4000 heats were poured last year at the open-hearth division of a large steel company with only eight running stoppers. This high pouring efficiency is attributed by the superintendent to the use of a continuous oven for drying the stopper rods prior to their initial installation.

♦ ♦ ♦

A large saving in power for operating a roller bed chain conveyor recently was effected by an Ohio stripmaker. The conveyor is used for transporting hot rolled strip from the coiling machine to the tying platform. The bed includes two parallel runs of ball bearing rollers spaced on 10-inch centers and staggered. Pusher lugs fastened at intervals to the links of a drag chain mounted between the strands, advance the coils on edge over the rollers.

♦ ♦ ♦

Three 7½-ton low type charging machines assembled entirely by welding are in successful operation at a steelworks in the Pittsburgh district where the weight of charging boxes and charges has been increased.

Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Foundry Developments

Progressive improvements adopted by a large Detroit foundry, discussed by A. Lenz, in Bulletin No. 70, C. O. Bartlett & Snow Co., Cleveland, 14 pp., 21 illusts.

In order to get at least one year's production from a set of patterns, it was found necessary to make all patterns and core boxes out of cast iron with a brinell hardness of about 200. Long loose pieces in core boxes that have to be hammered, or are likely to break if dropped on the floor, are made of manganese bronze, which is stiff and has excellent wearing properties. All vents are located in the core boxes or placed on jigs. On horizontal or slanting vents the vent wires are guided by long, hardened bushings which are replaced as soon as they show wear. All castings are shaken out red or white hot without any bad effect. This alone shows the big change in this type of iron in the last 14 years. Every smoke or gas-producing point has to be isolated and treated separately. Fresh air must be brought directly to the spot where it is required and should be in direct proportion to the amount of air removed by the exhaust system. The tendency, as a whole, is toward cleaner foundries, and it has been proved that it is possible to make a foundry just as clean and the air as clear as in most other manufacturing plants.

—STEEL, 9-24-31

Blisters in Plate Steel

Research investigation conducted on the effect of open-hearth practice upon the quality of plate mill steel, discussed by I. N. Goff and T. S. Washburn, in Blast Furnace and Steel Plant, September 1931, p. 1222, 2¼ pp., 2 illusts.

The principal factors in open-hearth practice which have been found to affect blisters in finished plates are the lime charge and FeO content of the slag, the method of working the heats and the deoxidation practice. The fact that high FeO in the slag results in an increase in blisters on the finished plates indicates that the gas forming these blisters is owing to a reaction between carbon and oxides. The theory is supported by the decrease in blisters resulting from furnace and deoxidation practice which produce steel with a lower iron oxide content. Results already obtained indicate that the lime charge should be maintained as low as possible; the exact percentage will be governed by the phosphorus specification. Medium carbon open-hearth heats should be tapped directly instead of being recarburized. The per cent yield which can be worked at a profit will depend upon the value of good plates obtained from that portion above 79.3 per cent yield less the cost of working this portion.

—STEEL, 9-24-31

Air Compressors

Care and operation of air compressors, discussed by C. H. Vivian, in Power, Aug. 25, p. 294, 3 pp., 2 illusts.

To gain the advantage of cool intake air, the intake point should be on the outside of the building on the north or coolest side. The cross-sectional area of the intake duct should be at least 50 per cent of the area of the compressor piston. The intake line should be enlarged 1-inch in diameter over the size at the compressor for each additional 10 feet in length. Use of an air filter at the intake is advisable. For the average installation, receiver capacity must be provided sufficient to accommodate the output of the compressor for one minute. The receiver should be placed outdoors where it can radiate some of the heat. If a valve is used in the discharge line to the receiver, a safety valve must be placed between it and the compressor. An oil should be used which has a narrow range of distillation and relatively low viscosity so that it will break down cleanly instead of vaporizing in stages. Piston rod stuffing boxes should be inspected frequently to guard against leakage of crankcase oil into cylinders. Care must be taken not to overtighten main bearings. On belt-driven compressors the tension should be on the underside of the belt wheel.

—STEEL, 9-24-31

All-Welded Hoppers

Details of constructing hopper cars by welding, discussed in Railway Mechanical Engineer, August 1931, p. 404, 4 pp., 6 illusts.

The cars of 70-ton capacity weigh 45,900 pounds each or only as much as 50-ton cars built by other methods. As compared with typical 70-ton cars of recent design, the welded car weighs 10,500 pounds or 18.6 per cent less and provides 85 cubic feet or 3.1 per cent greater cubic capacity all of which is available for carrying increased revenue loads. On the basis of $100 increased earning power per ton per year, it is anticipated that the 70-ton welded car will produce on the average $400 more revenue per year than one of equal nominal capacity but incorporating ordinary construction. There are approximately 1500 lineal feet of welding in the car. Of the 200 pounds of welding rod required, 56 per cent is deposited by the oxyacetylene process and 44 per cent by the electric arc.

—STEEL 9-24-31

Wire Rope Corrosion

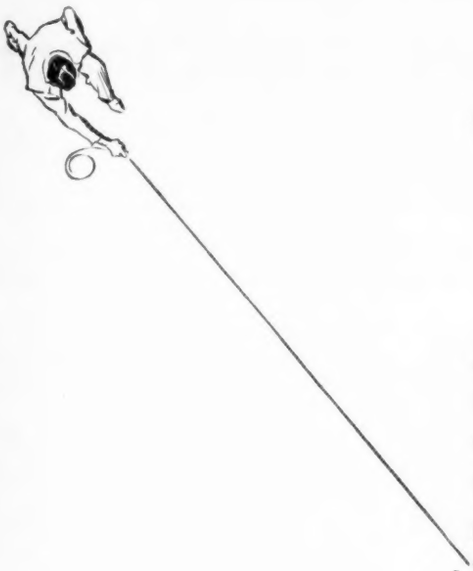
Factors which control the corrosion of wire rope, discussed in Wire Engineering, June-July 1931, p. 6, 1½ pp.

The best way to examine wire rope for signs of corrosion is to clean the rope in the valleys, or as is sometimes termed the interstices of the strands. By cleaning out thoroughly with a small pointed instrument and brush and examining the wires carefully, directly next to the point where they make contact with the adjacent strands, any tendency for pitting can be observed readily. It is possible to eliminate corrosion as a factor by the use of proper lubrication and this can be accomplished without using an excessive amount such as might cause loss of traction with its attending difficulties.

—STEEL 9-24-31

Wrought and Cast Steels

In its issue of Sept. 10, page 58, STEEL abstracted from *Research Group News* (Electric Steel Founders' Research Group) an article on "Wrought and Cast Steels." The last sentence in the abstract was stated incorrectly; it should have read: "It is the structural condition of the forging that results in its high ductility and not the ductility which is responsible for shortened life under high temperature, erosive, abrasive, and certain other conditions."



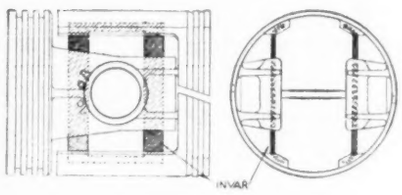
CONSTANCY!

THAT'S WHY A 100-FOOT INVAR TAPE ALWAYS MEASURES 100 FEET

Most metals won't "stay put" under varying conditions of heat and cold. However, Invar, a Nickel-iron alloy is a notable exception. Containing approximately 35% Nickel, it has a reputation for constancy...for exceptionally low expansibility. That's why a 100-ft. Invar surveyor's tape...in tropic sun or arctic cold...always measures a hundred feet.

Invar is a Nickel alloy with a scientific past and a bright future. Extensively used for scientific instruments, temperature regulating devices, etc., Invar is being adopted for machinery parts operating at high temperatures. When used with aluminum alloy pistons in automotive and aircraft engines, Invar overcomes excessive expansion and wear, prevents seizing, high oil consumption and allows ample clearance at all times between the piston and cylinder wall. In addition to low expansibility, Invar possesses these important mechanical properties: maximum stress, 78,500 to 85,000 p. s. i.; elongation, 40 to 45%; reduction of area, 60 to 65%.

Information concerning Nickel alloys of the Invar type will be gladly sent upon request.



Method of using INVAR for controlling expansion of non-ferrous alloy piston. Clearances between piston and cylinder wall as low as 0.003" are feasible with a 4" diameter piston.

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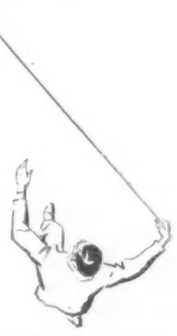

● Nickel alloyed with other metals—steel, stainless steel, cast iron, brass, bronze, aluminum, etc.—insures dependable mechanical properties and one or more of the following improvements: (1) Greater impact and fatigue strength. (2) Greater resistance to heat, corrosion and wear. (3) Better workability. (4) Improved color and appearance.

Nickel ALLOYS PERFORM BETTER LONGER

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Please send me information concerning Nickel alloys of the Invar type.

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Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

Drum Bodies Fabricated by Straight Line System

Niagara Machine & Tool Works, 637-697 Northland avenue, Buffalo, has developed a straight line system for manufacturing bodies of sheet steel drums having compound side seams. The accompanying illustration shows the setup of machines involved in this system, as well as the progressive steps in the forming of the seam.

Four corners of the body blank are notched at one time by means of the notching unit. The blank then passes over the motor driven roller conveyor to the new type motor-driven slip roll former, wherein it is curled into a cylinder. Slanted conveyor rolls and a squaring gage insure it entering the former squarely. Following this curling, the body is discharged and rolls to a stop at the end of a short ramp, from which point it is fed laterally into the seaming press. One stroke of this press produces channels along the adjacent edges of the curled blank, following which one pass through the seam closing attachment completes the seam. The body then is ejected by the closing attachment on a horn, ready for removal.

Units Are Adjustable

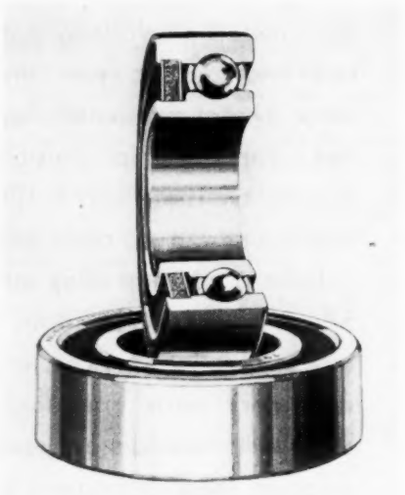
The notching unit consists of two individually motor driven gap presses, mounted on steel channels which are securely cross braced. One of these presses is adjustable by a screw to increase or decrease the distance between them to suit the length of the body blank. The notching dies also are adjustable to accommodate various body heights.

The seaming press is a double crank, single geared machine with overhead drive shaft. Crown, housings and base are tied together with six heavy steel rods and the slide is counterbalanced by steel springs. Its C-shaped base forms a horn which is encircled by the barrel body as it is taken from the ramp, this horn having a hinged support at its free end to insure rigidity.

On top of this horn is a die which at one stroke of the press produces an inner channel in one edge and an outer channel in the other. A cradle supports the cylinder and gages insure quick and accurate location of these channels. A safety treadle precludes premature stroke of the slide. The channels are overlaid on a guide on the die and a horizontal plunger, actuated by an air cylinder controlled by a treadle, moves the drum body laterally into engagement with the seam closing mechanism.

The seam closing attachment, which is mounted on the outside of the right hand housing of the press is motor driven and runs continuously. After engaging the work it finishes the seam with four rolls and feeds the drum body to the discharging point automatically.

According to the builder of this equipment, drum bodies produced by it are of uniform diameter, have tight, perfectly formed seams and are produced at low cost. Capacity of this production line is five or more drum bodies per minute.



New Norma-Hoffman bearing featuring "grease-sealed" construction

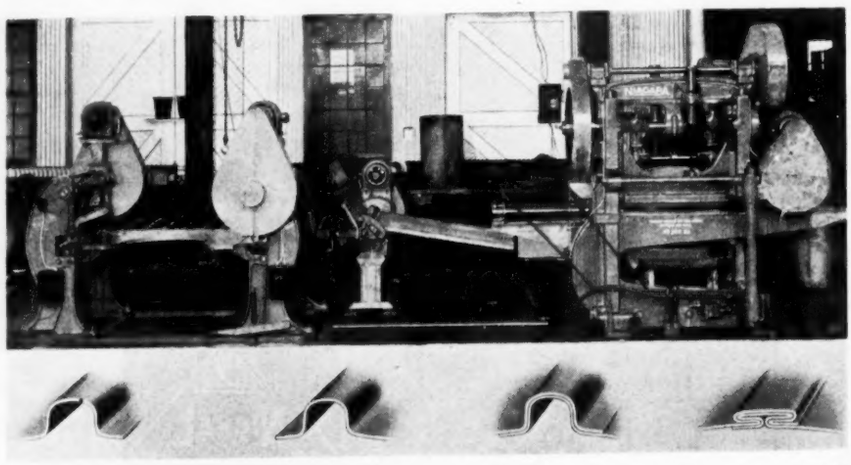
◆

Sealed Ball Bearings Carry Thrust and Radial Loads

Norma-Hoffman Bearings Corp., Stamford, Conn., has added to its line of precision ball bearings, a new series of felt protected closed type units. One of these is shown in the accompanying illustration, together with a broken section to reveal the internal construction.

Wide, solid inner and outer rings give maximum contact on shaft and in housing, and the design is such that these bearings can be clamped on both sides. The design also insures that thrust loads of considerable magnitude can be carried in either direction, in combination with heavy radial loads.

The grease-sealing feature embodies a substantial felt washer and thin fiber ring interposed between split snap rings held securely in a groove in the outer bearing ring.



"Straight line" system developed by Niagara Machine & Tool Works for rapid production of steel drum bodies with improved lock seams

The inner bearing ring is recessed to present a shoulder which, in conjunction with the felt washer, constitutes an effective labyrinth which is an added safeguard against escape of lubricant. There is ample grease space, thus reducing attention needed for proper lubrication.

This new series of bearings includes a full range of sizes, overall dimensions being such as to make them interchangeable with all other makes of self-protected bearings.

◆

Combined Punch and Shear Is Built in Small Size

Henry Pels & Co. Inc., 90 West street, New York, has brought out a small combination punch and shear particularly suited to the needs of shops handling light ornamental iron work, automobile body work, etc., as well as for welding shops, plant maintenance departments and shops doing occasional iron work in connection with other lines of manufacture. One of these machines of motor driven, portable type, is illustrated.

Work within the full capacity range is performed without changing knives and, as in the case of the larger machines sold by this company, the punch and the shear ends can be used independently and simultaneously, enabling two men to work on the machine at the same time without interfering with each other.

Among features of design may be mentioned: Roller bearing flywheel shaft; flywheel shaft pinion of high grade bronze; forged steel gears with accurately cut teeth; frame of heat treated rolled steel plate, guaranteed unbreakable; means for accurate, convenient and quick spotting of punch by means of a hand lever; foot trip, in addition to hand lever, allowing use of both hands to hold and locate material; and ability to trim legs of angles under the plate shear knives.

This new machine has capacity to cut angles and Tees square up to 3 x 3 x 5/16 inches and on miter up to 2 x 2 x ¼ inches. It will punch up to ¾-inch holes in plate up to ⅜-inch thick. The shear will cut plate of any length or width, up to ⅜-inch thick. The machine copes and notches angles up to 3 x 3 x 5/16 inches, and also cuts rounds up to 1 inch and squares up to 1 inch.

The flywheel shaft runs at 600 revolutions per minute, giving possible speed of 35 strokes per minute to each tool. A 2-horsepower motor is required.

Small combination punch and shear introduced by Henry Pels & Co.

Indicator for measuring cable loads developed by Martin-Decker Corp.

◆

Instruments Measure Loads On Wires or Wire Cables

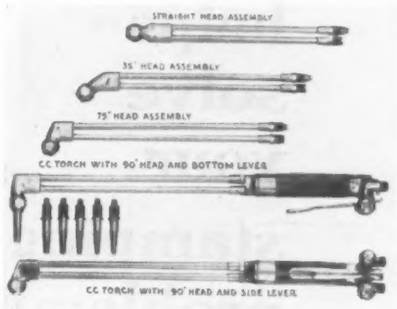
Martin-Decker Corp., 3431-45 Cherry avenue, Long Beach, Calif., has put on the market two compact, portable instruments for indicating tension on wires and cables, as of cranes and hoists, for instance. One of the standard small models is shown in operation, in the accompanying illustration.

This tension indicator operates on the deflection principle, which allows its being placed at any point of a cable under working conditions.

The principle is simple. When the instrument is clamped on, a slight offset is made in the cable between two hardened steel fixed points. The pressure required to make this offset is balanced by a body of antifreeze fluid behind a flexible diaphragm. The amount of this fluid pressure is a direct function of the tension on the cable, the setup constituting a force triangle with the line loads forming two sides and the fluid pressure the other. Deflection is so slight that there is no danger of permanent set or distortion of the cable at testing points.

The instrument is furnished in two models. The small type illustrated herewith, is made of aluminum alloy, weighs 11½ pounds and will operate on cables ranging from ¼ to ¾-inch in diameter. It can be furnished with a 30-pound capacity gage measuring tensions up to 3500 pounds, a 60-pound gage measuring up to 7500 pounds tension, or a 100-pound gage reading up to 16,000 pounds tension.

The heavy duty model, made of cast bronze, weighs 43 pounds and will handle cables ranging from ¾ to 2¼ inches in diameter. It will read up to maximum strain of 260,000 pounds on a single cable. This instrument has a recorder as well as an indicator and both these gaging units can be placed at any convenient point away from the three-point clamping unit on the cable.


STRAIGHT HEAD ASSEMBLY
35° HEAD ASSEMBLY
75° HEAD ASSEMBLY
CC TORCH WITH 90° HEAD AND BOTTOM LEVER
CC TORCH WITH 90° HEAD AND SIDE LEVER

Improved cutting torches designed by Bastian-Blessing Co.

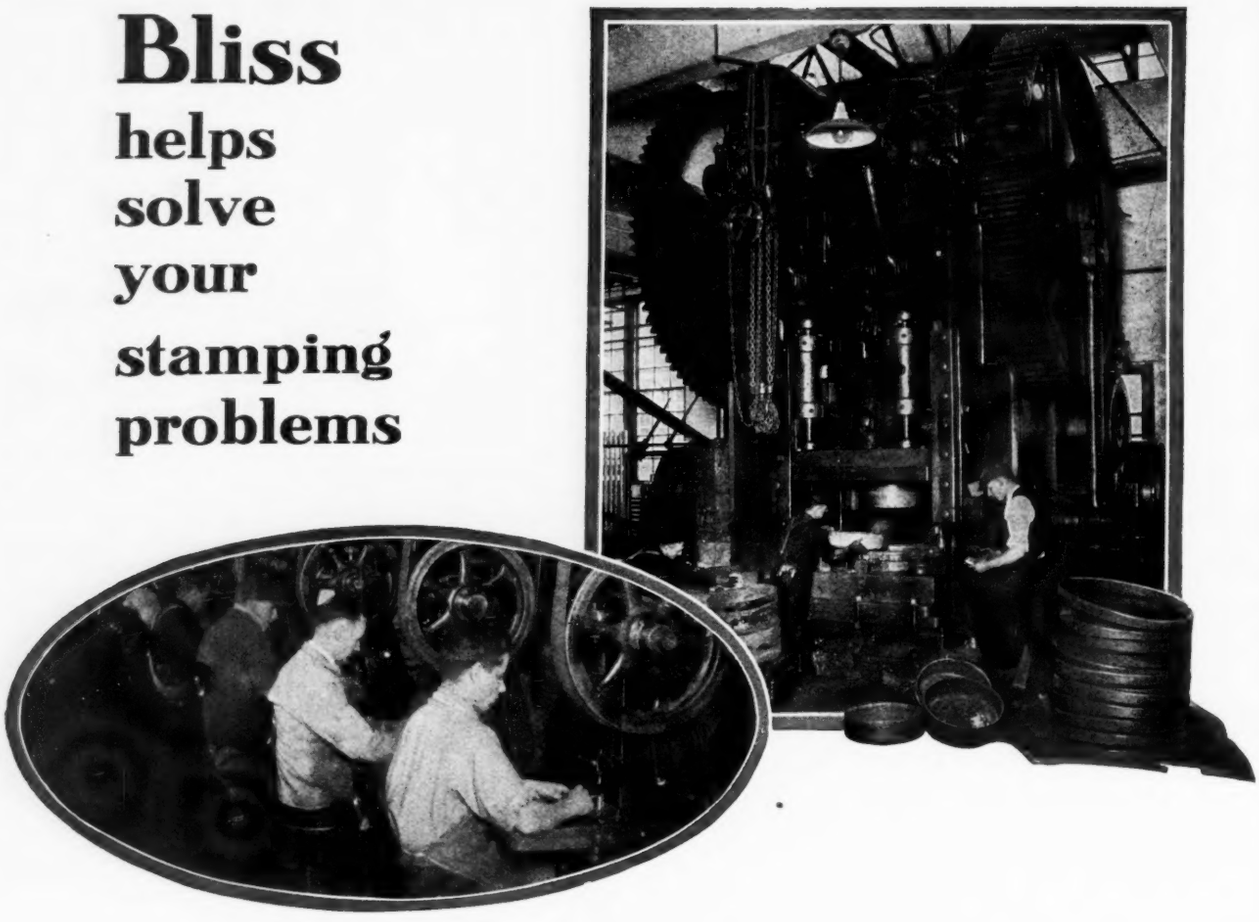
◆

Improved Cutting Torches Feature Efficiency

Bastian-Blessing Co., 240 East Ontario street, Chicago, has put on the market a new line of cutting torches featuring light weight, proper balance and economy and effectiveness in operation. Two models of these torches, together with various head assemblies and tips, are shown in the accompanying illustration.

The torches are of sturdy construction to stand up under hard service conditions. They have wide range of adaptability, mere changing of tips making it possible for them to utilize effectively acetylene, hydrogen, carbonidrogen, oxyacetlene, and liquified petroleum gases such as butane, propane, etc.

Bliss helps solve your stamping problems



IN many cases Bliss engineers have found a simple, economical and speedy method of performing operations that had previously been considered unavoidably laborious and costly.

Whether your sheet metal operations involve blanking, drawing, punching, piercing, stamping, or embossing light or heavy gauge parts in any size or shape, the extensive experience of the Bliss engineers can be of real help to you.

Even though your particular problem may be unique, at least some of its phases have already been solved by Bliss equipment of various types, and the Bliss recommendations have behind them the authority of 70 years of experience and highly successful designs.

BLISS

E. W. BLISS CO. MAIN OFFICE AND WORKS **BROOKLYN, N. Y., U. S. A.**

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No. 561

Heavy Shape Orders, in Dull Market

Operations Barely Holding at 32 Per Cent—Wage Decision Now Announced May Impinge on Prices—Gold Suspension of Little Influence as Yet

STRUCTURAL steel orders for 89,600 tons, putting awards for the year ahead of the comparable period of 1930, relieve a steel market otherwise colorless and hard pressed to maintain production at approximately 32 per cent.

At New Orleans, 58,700 tons has been placed for a bridge, assuming that a technicality does not cloud the letting of the approaches. For a courthouse in New York 7700 tons was distributed, and for a Long Island bridge, 7000 tons. Pending work, already large, is swelled by the approach of 60,000 tons of federal projects toward the active stage.

In other steel products and in other major consuming outlets, the ebb and flow of demand have neutralized out. Ford has placed some experimental steel for his revised model, and implement manufacturers in the Chicago district are considering price reductions to stimulate their sales—and also their consumption of steel—but these developments put no appreciable tonnage on mill books at the moment.

In well-informed steel circles there are no illusions concerning railroad business. Despite reports to the contrary, the only sizable rail inquiry now pending is 30,000 tons for the Chesapeake & Ohio for October-November rolling. Other carriers, including the New York Central and Pennsylvania, will be late with their inquiries, their requirements will not be rolled until early 1932, and rail mills at Chicago are now on the verge of shutting down indefinitely.

Quotations on steel products outwardly are firm. Such business as is being placed is so small that buyers do not haggle. On most products current levels have been extended informally into the fourth quarter. With a steel wage reduction of 10 per cent universal beginning Oct. 1, and further reductions in salaries possible the entire price matter may be reopened.

England's suspension of the gold standard has aroused speculation as to the effect on foreign pig iron and iron ore prices. If past experience is a safe guide, quotations will be advanced to offset the depreciation in exchange, leaving the actual net cost to the buyer in the United States little changed. Business affected by fluctuations in exchange, however, is only a small portion of the total.

Sheet mills anticipate a little better demand from the automotive industry in October and November. So pronounced is the increase in the trucking of sheets from nearby mills to Detroit automotive consumers that a revision of the price, or, perhaps, the establishment of a Detroit base price, are possibilities. Plate inquiries at Chicago are featured by 15,000 tons for pipe and oil tanks. Jobbers are buying wire products more liberally, offsetting a decline in sales to manufacturing consumers.

Not in years has there been such a lack of quarterly contracting for pig iron. Shipments continue to show moderate expansion, but melters buy only for immediate needs. A slight seasonal improvement has appeared in the markets for foundry and domestic coke. Producers of scrap are unwilling to sell at present prices, and buying is restricted to contract requirements.

The movement of Lake Superior iron ore from mines to upper lake docks will terminate this year at least a month earlier than usual. Sharp curtailment of shipments has reduced the excess of stocks at lower lake ports and furnaces from 8,400,000 tons as of May 1 to 133,000 tons Sept. 1.

STEEL's composite of 12 leading iron and steel products this week is off 1 cent to $31.02, reflecting a reduction in Virginia pig iron. The finished steel composite remains unchanged for the ninth consecutive week at $48.72, while the steelworks scrap composite holds at $8.83.

Composite Market Averages

	This Week (Sept. 23)	Last Week (Sept. 16)	One Month Ago (Aug., 1931)	Three Months Ago (June, 1931)	One Year Ago (Sept., 1930)	Ten Years Ago (Sept., 1921)
Iron and Steel Composite	$31.02	$31.03	$31.05	$31.02	$32.65	$35.34
Finished Steel Composite	48.72	48.72	48.72	48.60	50.87	54.73
Steelworks Scrap Composite	8.83	8.83	8.70	8.84	12.81	10.97

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. **Finished Steel Composite:**—Plates, shapes, bars, sheets, hot strip, nails, wire, tin plate, pipe. **Steelworks Scrap Composite:**—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Sept. 23, 1931	August 1931	June 1931	Sept. 1930
PIG IRON				
Bessemer, del. Pittsburgh	$18.26	18.26	18.26	20.13
Basic, valley	17.00	17.00	17.00	17.75
Basic, eastern del. eastern Pa.	16.50	16.75	17.00	17.90
No. 2 foundry, del. Pittsburgh	18.26	18.26	18.26	19.13
No. 2 foundry, Chicago	17.50	17.50	17.50	17.50
*Southern No. 2, Birmingham	12.00	12.00	12.00	14.00
**No. 2X, Virginia furnace	18.00	18.25	18.25	18.25
**No. 2X, Eastern del., Phila.	17.26	17.51	17.76	19.76
Malleable, valley	17.00	17.00	17.00	18.35
Malleable, Chicago	17.50	17.50	17.50	17.50
Lake Superior, charcoal, del. Chi.	25.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	17.63	17.63	17.63	18.50
Ferromanganese, del. Pittsburgh	89.79	89.79	89.79	103.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $11, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.40	2.40	2.40	2.60
Connellsville foundry, ovens	3.25	3.25	3.25	3.50
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	29.00	29.00	29.00	31.00
Sheet bars, open-hearth, Pitts.	29.00	29.00	29.00	31.00
Billets, open-hearth, Pittsburgh	29.00	29.00	29.00	31.00
Wire rods, Pittsburgh	35.00	35.00	35.00	36.00

	Sept. 23, 1931	August 1931	June 1931	Sept. 1930
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.60	1.60	1.65	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.89	1.89	1.94	1.89
Iron bars, Chicago	1.70	1.70	1.70	1.75
Shapes, Pittsburgh	1.60	1.60	1.65	1.60
Shapes, Philadelphia	1.76	1.76	1.76	1.66
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.65	1.60
Tank plates, Philadelphia	1.80½	1.80½	1.85½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.85	1.85	1.85	2.10
†Sheets, No. 24, hot, ann., Pitts.	2.40	2.40	2.15	2.40
Sheets, No. 24, galvan., Pitts.	2.90	2.90	2.80	3.00
Sheets, No. 10 blue anneal., Chi.	2.00	2.00	2.00	2.15
†Sheets, No. 24, hot, ann., Chi.	2.55	2.55	2.40	2.60
Sheets, No. 24 galvan., Chi.	3.05	3.05	2.95	3.25
Plain wire, Pittsburgh	2.20	2.20	2.20	2.30
Wire nails, Pittsburgh	1.90	1.90	1.80	2.00
Tin plate, per base box, Pitts.	5.00	5.00	5.00	5.25

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.75	10.70	10.30	15.70
Heavy melting steel, eastern Pa.	8.75	8.55	8.75	13.00
Heavy melting steel, Chicago	8.00	8.25	8.50	12.25
No. 1 wrought, eastern Pa.	9.75	9.75	10.00	14.25
No. 1 wrought, Chicago	8.00	8.25	8.25	11.25
Rails for rolling, Chicago	10.50	10.50	10.90	14..50

Sheets

Seasonal Improvement Lacking —Revision of Automotive Sheet Price Possible

SHEET PRICES, PAGE 49

Pittsburgh—Sheet orders have fluctuated moderately from week to week but business so far this month shows little change from the August rate. Automotive requirements remain light and little increase is anticipated this month. Orders from Ford have been small, those placed for use in the new model being entirely for experimental purposes. Various automobile model changes scheduled for the next several months are expected to provide better sheet business in October or November. Electric refrigerator manufacturers still are better sheet consumers than a year ago but this demand is declining seasonally. Radio manufacturers are slow to increase their operations. Prices are steady but lack the test of large tonnage. On current business the market continues 2.40c for hot-rolled annealed sheets; 2.90c for galvanized, and 1.85c for blue annealed. Autobody sheets are 3.10c, but there is a possibility of a revision in the fourth quarter in view of the increase in production in the Detroit district. Mill operations are fairly well sustained at 30 to 35 per cent.

New York—While there is little improvement in sheet demand, prices continue firm. Unless there are some untoward developments it appears present levels will carry into the next quarter.

Philadelphia—Bids submitted on 250 tons of galvanized sheets for a building at Market and Twelfth streets reveal the published price is steady. Another test is expected on approximately 300 tons of galvanized sheets for a ventilating system for the Pennsylvania railroad's Thirtieth street station. The market is sluggish.

Buffalo—Demand for sheets is disappointing, in view of the hope of some producers for larger automotive orders. Mills continue to operate at 35 to 40 per cent.

Youngstown, O.—Steel sheet purchases still are confined to immediate needs, this applying to common grades as well as full-finished. Valley interests are looking more hopefully to the autumn weeks. The one redeeming feature of the sheet trade today is the steadiness of prices of all grades.

Cleveland—Other mills are falling in line with the action two weeks ago of the leading independent in reaffirming prices for fourth quarter. However, there is nothing to feature the market except price stability. The character of small sales does not forecast early efforts of customers to anticipate needs for the last quarter. Somewhat better inquiries have come out but as yet are not developing into orders. The current year is likely to prove one of the worst in a long time for local barrel manufacturers.

Cincinnati—Fourth quarter inquiry at sheet mills is light. Prices are firm.

Chicago—Sheet mill operations are holding to about 40 per cent. Mills have no backlogs of consequence, and only scattered business, chiefly of carload proportions. Jobbers are carrying light stocks. Some sales of No. 24 galvanized have been made at 3.05c, delivered Chicago.

St. Louis—New sheet orders are being placed sparingly, and specifications are below expectations. Demand for galvanized has failed to show the usual seasonal upturn; slight improvement is noted in the movement of automotive material.

Birmingham, Ala.—Demand sustains sheet mills operations at slightly above 50 per cent, business being well diversified. Prices are steady.

Clamp Tank & Specialty Co., Okmulgee and Tulsa, Okla., manufacturer of patented steel tanks, has filed notice of dissolution.

Current Finished Steel Prices

Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh base	1.70c
Gary, Ind. Harbor, base..	1.80c
Chicago, del.	1.85c
Philadelphia, del.	1.99c
Birmingham, base	1.85c

BLUE ANNEALED No. 9-10

Pittsburgh, base	1.85c
Chicago, district mills	1.95c
Chicago, delivered	2.00c
Philadelphia, del.	2.14c
St. Louis, delivered	2.20½c
Birmingham	2.00c to 2.05c
San Francisco, c.i.f.	2.50c

HOT ROLLED ANNEALED No. 24

Pittsburgh, base	2.40c
Gary, Ind. Harbor, base	2.50c
Chicago, del.	2.55c
Philadelphia, del.	2.69c
Birmingham, base	2.55c
St. Louis, del.	2.75½c

GALVANIZED No. 24

Pittsburgh, base	2.90c
Gary, Ind. Harbor, base	3.00c
Chicago, del.	3.05c
Philadelphia, base	3.19c
Birmingham, base	3.05c
St. Louis, del.	3.25½c

AUTOMOBILE No. 20

Pittsburgh, base	3.10c

FURNITURE

Pitts., No. 10 heavy	2.75c
Pitts., No. 20 light	3.35c

TIN MILL BLACK No. 28

Pittsburgh, base	2.65c
Gary base	2.75c
St. Louis, del.	2.90½c

HEAVY COLD ROLLED No. 10

Pittsburgh base	2.35c
Gary, Ind. Harbor, base	2.45c
Chicago, del.	2.50c
Philadelphia, del.	2.64c
St. Louis, del.	2.70½c

COLD ROLLED No. 20

Pittsburgh, base	2.95c
Gary, Ind. Harbor, base	3.05c
Chicago, del.	3.10c
Philadelphia, del.	3.24c
St. Louis, del.	3.30½c

Tin and Terne Plate

Prices per 100 pound box Pittsburgh

Tin plate, coke base	$5.00

Gary, Ind., base 10 cents higher.

Long ternes, 24, unassorted, lb.	3.15c

Wire Products

(To Jobbers-Merchant Trade)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.90 and 2.00
Cement coated nails	1.90 and 2.00
Galvanized nails	3.90 and 4.00

(Per pound)

Polished staples	2.35c and 2.45c
Galvanized staples	2.60c and 2.70c
Barbed wire, gal.	2.55c and 2.65c
Annealed fence wire	2.35c and 2.45c
Galvanized wire	2.80c and 2.90c
Woven wire fencing, (9-11 ga.)	$55.00 and $60.00
(12½ ga. and lighter)	60.00 and 65.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Rivets

Struc. c.l., Pitts.-Cleve.	2.50c
Struc., c.l., Chicago	2.60c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chi., Cleve.	70, 10 and 5 off

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, del.	1.80½c
New York, delivered	1.88c
Boston, delivered	2.00c
Chicago, base	1.70c
Cleveland, base, for railroads	1.65c
Lackawanna, N. Y., base	1.70c
Birmingham, base	1.75c to 1.80c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	1.85c to 1.95c
St. Louis, del.	1.95½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, del.	1.76c
New York, del.	1.85½c
Boston, del.	1.98½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham base	1.75c to 1.80c
Pacific Coast, c.i.f.	2.05c to 2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham base	1.75c to 1.80c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base, local del.	1.65c
Cleveland base, out. del.	1.65c
Philadelphia, del.	1.89c
New York, del.	1.93c
Boston, del.	2.00c
Pittsburgh, cold finish	1.85c
Pittsburgh, forg. qual.	1.90c

RAIL STEEL

Chicago Heights	1.60c
Eastern mills	1.30c to 1.35c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c
New York, delivered	1.93c to 2.03c
Philadelphia, delivered	1.89c to 1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.60c to 1.80c
Chi., rail steel	1.35c to 1.60c
Chi., rail steel, bridge and culvert	1.60c to 1.65c
Philadelphia, cut lengths	2.04c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base, Pittsburgh, Chicago, Buffalo and Cleveland	2.10c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.45c to 2.90c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to $6.75 off
Carloads, Chicago dist.	7.00 to 7.45 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.25	1.25-1.75 Ni.	1.05
2100	0.55	5100 .80 - 1.10	
2300	1.50	Cr.	0.45
2500	2.25	51.00 Cr.	
3100	0.55	spring	0.20
3200	1.35	6100 bars	1.20
3300	3.80	6100 Spring	0.95
3400	3.80	Cr., Ni., Van.	1.50
4100 .15 to .25		Carbon Van.	0.95
Mo.	0.50	9250 (flats)	0.25
4600 .20 to .30 Mo.		9250 (rds.,sq.)	0.50

Strip, Hoops Bands

Hot strip, to 6-in., Pitts.	1.65c
Do, 6 1/16 to 24-in., Pitts.	1.55c
Hot strip, bands 6 in. and under, Chicago	1.75c
Do, 6 1/16 to 24 in.	1.65c
Cooperage hoop, Pitts.	1.70c to 1.80c
Do, Chicago	1.85c to 1.95c
Cold rolled strip, Pitts., Cleveland	2.15c to 2.25c
Worcester, 3 tons, over	2.30c

Rails, Track Material

Standard bess. and open hearth rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$22.00 to $26.00
50 to 75	20.00 to 24.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, Chi. base	2.75c
Spikes, railroad, mills	2.70c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.70c
Spikes boat, barge, Pitts.	2.90c
Spikes, railroad, Chi.	2.80c
Track bolts, Pitts., steam roads	3.80c
Do, standard, jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plate, mills	$39.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 and 10 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 and 10 off

Tire bolts ..... 60, 10 and 10 off

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished ..... 73 and 10 off

HEXAGON CAP SCREWS

Milled ..... 80-10-10-5 off

Upset 1 in. diam. and smaller.... 85-10 off

SQUARE HEAD SET SCREWS

Milled ..... 80-5 off

Upset 1 in. and smaller ..... 80-10-5 off

Upset, larger than 1 in. 80-5off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c

Do, less carloads, 5 kegs or over, 2.75c; less than 5 kegs 2.90c.

Chain, BB, BBB, 9/16-1½ in. ..... 33 1/3 off

Sheet piling, Pitts. 1.90c

Bars

Buying Is Delayed and Fourth Quarter Covering Is Slow—Auto Demands Are Light

BAR PRICES, PAGE 49

Chicago—Lack of volume business from regular buying groups characterizes the bar market. Production is at or near 30 per cent. Forward sales are confined chiefly to individual projects, or to cover specific orders. Trouble experienced by producers of bars, plates and shapes in holding 1.70c, Chicago, occurs largely from fabricators of deformed bars and structural material, whose low bids have been out of proportion to production costs and overhead, and who thus exert pressure for lower steel prices on individual jobs. Some views are that October automotive business will be less promising than was indicated recently. One producer notes bar, plate and shape specifications were the best in about five weeks. Forward inquiry and sales, although in small lots, show improvement.

Implement interests are preparing to stimulate sales, and lower implement prices are understood to be planned. This is to allow early resumption of production by implement makers.

New York—While no formal action has been taken, it would appear books are open for fourth quarter, to all intents, at 1.60c, Pittsburgh, the prevailing level. Buying remains light, with consuming interest principally in spot needs. Common iron bars are 1.60c to 1.70c, Pittsburgh.

Philadelphia—Alloy steel bar prices, long unchanged, have been reaffirmed and similar action on commercial bars at 1.60c, Pittsburgh, by one interest is expected at any time. Demand is spotty and unchanged.

Pittsburgh—Steel bar business shows occasional gains in miscellaneous demand, although total business so far this month has changed slightly from the August rate. Dullness in automotive requirements is important in restricting bar activity. Little fourth quarter business is appearing but prices are being continued on the present basis of 1.60c, Pittsburgh.

Youngstown, O.—Purchases of steel bars involve small lots for quick shipment, usually a wide assortment entering into carload lots. Bar mills are about 25 per cent active. The quotation is firm at 1.60c, Pittsburgh.

Cleveland—After a mild upswing in specifications week before last, last week's orders are somewhat diminished. The 1.65c, Cleveland, base is applied for merchant steel bars, both outside and local delivery. For those few who are asking for a fourth-quarter price, the figure is being extended in the absence of formal announcement.

Cold-Finished Sales Showing Little Activity

Cold Finished Prices, Page 49

Pittsburgh—The continued dull outlook in the automotive industry provides cold-finished bar producers with little hope for improvement in business over the remainder of September. The outlook for October remains uncertain, but some improvement in orders, if not in shipments, is anticipated for that period. Interest in fourth-quarter requirements continues light. A few contract have been entered at 2.10c, Pittsburgh, unchanged from the recent market.

Cleveland—Demand for cold-rolled steel bars is continued on a day-to-day minimum basis without especial feature. Shipments are not dipping appreciably in aggregate for all interests below the minimums of the summer. The 2.10c, Cleveland, figure is extended into the fourth quarter.

Chicago Employment Gains

Chicago—Employment in 499 Chicago industries in August showed a seasonal increase of 0.1 per cent, while payrolls were up 0.3 per cent. August was the first month to register a gain in Chicago payrolls since February, and the first time since last December for an advance in employment.

Plates

Fifteen Thousand Tons for Oil Tanks Pending—Railroads Inquiring for Fourth Quarter

PLATE PRICES, PAGE 49

Chicago—About 15,000 tons of storage tank plates and miscellaneous pipe needs for the oil country constitute the chief work in sight. General policies of keeping oil in the ground are an adverse factor in prospective storage tank business. Plates are 1.70c, base, mills. Continental Construction Co. may undertake, in the near future, extension of its 26-inch Texas-Chicago pipe line to Milwaukee at an additional cost of $3,000,000, but contracts have not been closed.

Pittsburgh—Plate sales remain at a low level, approximating the August volume. Orders for river equipment are light. Plates usually are 1.60c, Pittsburgh.

New York—The usual price on plates is 1.70c, Coatesville, Pa., although the quoting of this figure on less than carload lots gives the market an easy tone. Pending ship work continues a feature.

Philadelphia—Plates are easy at 1.70c, base, Coatesville, Pa., and this price is likely to be continued into the fourth quarter. The Bath Iron Works submitted what on its face appears to be the low bid for 11 destroyers requiring 9900 tons of plates, with United Dry Dock Co., second, and Bethlehem Shipbuilding Corp., third. It is believed at least five of the ships will be built in the navy's yards.

Cleveland—Consumers hold to their policy of hand-to-mouth purchasing. It is doubtful if a price announcement would lead the general run of customers to formulate inquiries. Most of the railroads are in the market for boiler and fire-box plate needs for the fourth quarter. This includes the Chesapeake & Ohio, Erie, and Big Four. On the general run of orders 1.60c, Pittsburgh, is well observed.

Contracts Placed

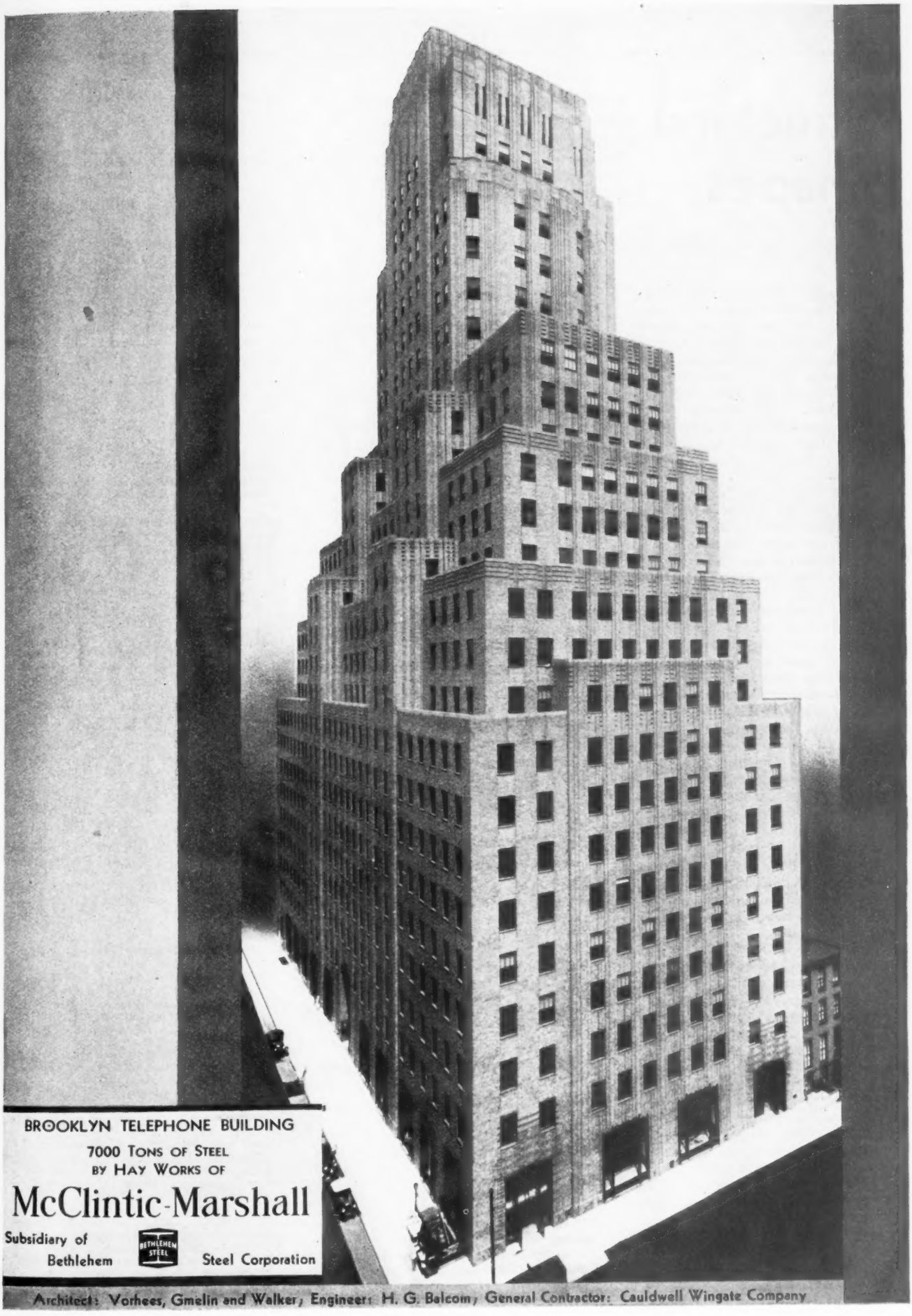
235 tons, 18 to 28-inch steel pipe for irrigation project, to unnamed interests in Spokane, Wash., by United Water Co., Wenatchee, Wash.

Contracts Pending

1462 tons, armor, navy ordnance department, Washington; Carnegie Steel Co. low on 432 tons; Midvale Co., 110 tons; and Bethlehem Steel Co., 920 tons.

225 tons, 24 and 36-inch welded steel pipe, 3/16-inch material, for Reynolds irrigation district, Boise, Idaho; bids Sept. 30.

110 tons, 200,000-gallon steel tank and tower, Los Angeles General hospital, Los Angeles; bids Sept. 28.



BROOKLYN TELEPHONE BUILDING

7000 TONS OF STEEL

BY HAY WORKS OF

McClintic-Marshall

Subsidiary of Bethlehem Steel Corporation

Architect: Voorhees, Gmelin and Walker; Engineer: H. G. Balcom; General Contractor: Cauldwell Wingate Company

Structural Shapes

Week's Awards Near 100,000 Tons As New Orleans Bridge Is Placed—New York Outlook Promising — New Jobs Call for More Than 70,000 Tons

STRUCTURAL SHAPE PRICES, PAGE 49

New York—Structural steel outlook for the remainder of the year is promising. A heavy tonnage pends on which action has been taken on general contracts while two large jobs are expected out soon, namely final sections for the West Side elevated highway and several docks, taking an estimated 40,000 tons. For the Bronx county courthouse 7700 tons is reported placed. Activity is confined almost entirely to public and engineering work. About 1200 tons for the United States embassy building, Paris, will be bought in Europe, probably Belgium. Williamson Construction Co., Turtle Creek, Pa., has the contract for the steel core wall, a dam at Ridgway, Pa. Two Chicago contractors are low on general contracts for the Hartford and Miami postoffices. A new ruling requires bonds for subcontractors on New Jersey highway and bridge work. New York Central opens bids Sept. 30 on plates, shapes and bars, this in addition to regular second half requirements already placed. For the Trenton, N. J., postoffice 1500 tons have been awarded.

Inland freight terminal taking 24,000 tons of shapes will probably be placed by Turner Construction Co., contractor, this week.

Worcester, Mass.—Eastern Bridge & Structural Co. has closed on 2500 tons for Worcester municipal memorial auditorium and 240 tons for a store house for Worcester sewer department.

Philadelphia—Approximately 60,000 tons of shapes are involved in government work at Washington on which construction contracts in one form or another are active. Of this, 12,000 tons for the department of justice building and 6000 tons in the superstructure of the Supreme Court go in Oct. 21. The rest, 42,000 tons, is inactive, foundation bids only being figured. Miscellaneous construction locally is better, but shapes are easy at 1.70c, nearest mill.

Pittsburgh — Specifications for plain structural material are quiet and little changed from the rate of the past month. The 1.60c base is being extended into the fourth quarter.

Cleveland—Mill specifications for structurals are further depressed this week, though the market holds at 1.60c, Pittsburgh. Awards include state bridges at Athens and Elyria, O. New building work is absent.

Chicago—Moderate specifications due on previous contracts have stimulated structural mill activity, and the average is 30 to 35 per cent. It is expected a part of the 58,700 tons for the Harbor Belt Line railroad bridge at New Orleans will be fabricated here. Weakness in plain material prices is confined chiefly to individual projects, and apparently has not become general. Moderate forward inquiry is noted, but this seldom extends more than 30 days.

Birmingham, Ala. — Operating schedules are being maintained by structural fabricators at five days a week with numerous contracts being received but all under the 100-ton size.

Contracts Placed

58,700 tons, bridge, Mississippi river above New Orleans, public belt line commissioin, four contracts: Contracts 3 and 4 covering superstructures to American Bridge Co., Pittsburgh, approximately 20,000 tons; contracts 5 and 6 covering approaches and involving the balance to McClintic-Marshall Corp., Bethlehem, Pa.; formal award of latter hinges upon settlement of legal difficulties over bond.

7700 tons, Bronx county court house, 158th and 161st street from Mott to Walton avenues, Bronx, N. Y., to George A. Just Co., Brooklyn, N. Y.; William Kennedy Construction Co., Brooklyn, contractor.

7000 tons, Shelter island bridge, Long Island, N. Y., to Independent Bridge Co., Pittsburgh.

Awards Compared

	Tons
Awards this week	**89,600**
Awards last week	**33,072**
Awards two weeks ago	**20,184**
Awards this week in 1930	**35,492**
Av. weekly awards, 1930	**35,242**
Av. weekly awards, 1931	**37,919**
Av. weekly awards, August	**20,024**
Total awards to date, 1930	**1,406,958**
Total awards to date, 1930	**1,478,858**

2500 tons, overhead bridges of St. Louis Terminal Railway association, East St. Louis, Ill., to Mississippi Valley Structural Steel Co., Chicago.

2500 tons, Worcester municipal memorial auditorium, Worcester, Mass., to Eastern Bridge & Structural Co., Worcester.

1500 tons, postoffice, Trenton, N. J., to Newton A. K. Bugbee, Trenton, to be fabricated by American Bridge Co., Pittsburgh; Karno-Smith Co., Trenton, general contractor.

1300 tons, home economics building, Cornell university, Ithaca, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa. Previously reported to American Bridge Co., Pittsburgh.

955 tons, bridges, Sangamon county, Ill., to Clinton Bridge Works, Clinton, Iowa.

690 tons, school, Auburn, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa., through Mathew Rauen Co., Chicago, contractor.

555 tons, Refiners' Trust Co. building, Beaver street, New York, to Ingalls Iron Works, Verona, Pa.

550 tons, school, Chancellor avenue, Newark, N. J., to Maxwell Spiro & Co., Jersey City, N. J.

500 tons, bridge over Thompson river, Ashcroft, B. C., to unnamed interests through Moncrieff & Vistaunet Ltd., contractors, Vancouver.

450 tons, highway bridge, Columbus, Tex., to Houston Structural Steel Co., Houston, Tex.

350 tons, pump and power house for Chicago sanitary district, Chicago, to McClintic-Marshall Corp., Bethlehem, Pa.

350 tons, Principia college, Elsah, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

350 tons, school, White Plains, N. Y., to Bethlehem Fabricators Inc., Bethlehem, Pa., through D. M. W. Contracting Co., Brooklyn, N. Y., contractor.

320 tons, highway commission, Athens county, O., to American Bridge Co., Pittsburgh.

300 tons, grade crossing elimination, for Pere Marquette railroad, Wayne, Mich., to American Bridge Co., Pittsburgh.

300 tons, navy mooring mast, Sunnyvale, Calif., to Wellman Engineering Co., Cleveland.

300 tons, school, Fifty-ninth street, Philadelphia, to Bethlehem Fabricators Inc., Bethlehem, Pa.

280 tons, junior high school, Munhall, Pa., to Keystone Engineering Co., Pittsburgh, 50 tons reinforcing bars to Truscon Steel Co., Youngstown, O.; Hodder Construction Co., Raddock, Pa., contractor.

275 tons, Ray Tompkins house, Yale university, New Haven, Conn., to Bethlehem Fabricators Inc., Bethlehem, Pa.

250 tons, milk warehouse for Sidney Wanzer & Sons, Chicago, to Vierling Steel works, Chicago.

250 tons, National Bank building, Topeka, Kans., to Kansas City Structural Steel Co., Kansas City, Mo.

250 tons, steel span for Spokane, Portland & Seattle railway, Adams county, Wash., to Poole & McGonigle, Portland, Oreg.

250 tons, school, Pottsville, Pa., to Progressive Iron Works, Reading, Pa.

240 tons, sewer department store house, Worcester, Mass., to Eastern Bridge & Structural Co., Worcester.

240 tons, pontoons and dredge pipe, United States engineers, Memphis, Tenn., to St. Louis Structural Steel Co., St. Louis.

200 tons, gymnasium, Staunton, Va., to

Bethlehem Construction Co., Bethlehem, Pa.
180 tons, state bridge, Great Barrington, Mass., to Haarmann Steel Co., Holyoke, Mass.; Fred T. Ley & Co. Inc., Springfield, contractor. Kalman Steel Corp., Bethlehem, Pa., awarded 20 tons reinforcing bars.
180 tons, oil barge for Atlantic Refining Co., to McClintic-Marshall Corp., Bethlehem, Pa.
175 tons, bridge near Lay, Colo., to unnamed interest.
155 tons, garage, Syracuse Lighting Co., Syracuse, N. Y., to Syracuse Engineering Co., Syracuse; Dawson Bros. Construction Co. Inc., Syracuse, contractor.
150 tons, Keenan health center, Milwaukee, to C. Hennecke Co., Milwaukee.
145 tons, highway bridge, Connecticut street, Melford, Conn., to McClintic-Marshall Corp., Bethlehem, Pa.
125 tons, addition to boiler house for Armour Co., Chicago, to St. Paul Foundry Co., St. Paul, Minn.
115 tons, highway work, Mesa county, Colo., to unnamed interest.
114 tons (76 tons shapes, 38 bars), annex, Home of Aged Women, Boston, to New England Structural Co., Boston; C. S. Cunningham & Sons Construction Co., Boston, contractor.
105 tons, Samuel Reed hall, Plymouth, N. H., to Lyons Iron Works, Manchester, N. H.; Davison & Swanburg, Manchester, contractors.
101 tons, bridge near Elyria, O., to Ben-Tom Supply Co., Columbus, O., through Dodge & Hussey, Columbus. Work also includes 71 tons reinforcing steel to same interest.
100 tons, Panama canal, to Frank M. Weaver & Co., Lansdale, Pa.
100 tons, veterans' hospital, Lincoln, Nebr., to Paxton & Vierling Iron Works, Omaha, Nebr.
100 tons or more, jail equipment for addition to state penitentiary, Walla Walla, Wash., to Fries & Sons, Covington, Ky.
100 tons or more, jail equipment for city jail, Wenatchee, Wash., to Stewart Iron Works, Chicago.
100 tons, postoffice, Las Vegas, Nev., to Consolidated Steel Corp., Los Angeles.
100 tons or more, warehouse and garage, C. W. Stone Co., Lynn, Mass., to Lester C. Gustin, Boston; W. M. Bailey Co., Boston, contractor.
100 tons, postoffice, Warren, Pa., to Bethlehem Fabricators Inc., Bethlehem, Pa., through Rosen & Fischel, Chicago, contractors.

Contracts Pending

17,000 tons, interstate commerce building, Washington; bids later.
15,000 tons, postoffice, department building, Washington; bids later.
15,000 tons, postoffice, court house and custom house, Detroit; bids opened Oct. 15.
7500 tons, for New York Central elevated viaduct, between Eighteenth and Thirtieth streets, New York, revised bids to be opened Sept. 29.
5000 tons, state prison, Milan, Mich.
5000 tons, auditorium, Grand Rapids, Mich.
2500 tons, plates, shapes and bars, New York Central railroad, in addition to second half requirements now under contract, bids Sept. 30.
1500 tons, Islais creek bridge, San Francisco; bids Sept. 30.
1400 tons, state bridge, Beaver Falls, Pa.; specifications in October.
1000 tons, state bridge, Newcastle, Pa.; specifications in October.
1000 tons, library for University of Texas, Austin, Tex.
1000 tons, wing for senate building, Washington; George A. Fuller Co., contractor.
900 tons, postoffice, Texarkana, Tex.
700 tons, Spruce street bridge, Passaic river, Paterson, N. J.
700 tons, county hospital, Lakeland, N. J.
626 tons, sheet steel piling, San Gabriel river outlet, Los Angeles flood control district; bids Sept. 28.
550 tons, agricultural economics building, Cornell university, Ithaca, N. Y.; bids Sept. 30.
500 tons, bridgework for Missouri Pacific railroad, near St. Louis.
500 tons, mental hospital, Camden, N. J.
500 tons, postoffice, Allentown, Pa., contemplated.
450 tons, Pier No. 23, San Francisco; bids Oct. 1.
350 tons, addition to exposition building, Oakland, Calif.; bids being taken.
250 tons, municipal highway bridge, Philadelphia.
230 tons, plant for unstated interest, Whitman, Mass.
200 tons, for addition to Pilgrim state hospital, Long Island, N. Y.
200 tons, additional buildings, coal breaker, Philadelphia & Reading Coal & Iron Co., St. Nicholas, Pa.
200 tons, municipal bridge, Summerdale avenue, Philadelphia; bids Sept. 30.
200 tons, school, Sussex, N. J.
200 tons, two state bascule bridges, Cecil and Dorchester counties, Md.; bids Oct. 13.
150 tons shapes, also 22 tons bars, science laboratory, Radcliffe college, Cambridge, Mass.; Morton C. Tuttle Co., Boston, contractor.
150 tons, bridge, division canals, New York state, Hudson Falls, N. Y.
130 tons, power house, Hill school, Pottstown, Pa.

Concrete Bars

Inquiring Tapering but Shipments Heavy—3000 Tons Being Bought for Chicago Sanitary District — Large Lots Bring Concessions—Awards Smaller This Week

REINFORCING BAR PRICES, PAGE 49

New York—Reinforcing bars are fairly firm at 1.93c, delivered, on ordinary lots, but large lots elicit concessions of $1 and $2 a ton. New inquiry is holding up well in New Jersey and upstate New York. Rust Engineering Co. is low on bridges for the Essex county park commission, Newark, and has a Delaware, Lackawanna & Western contract to carry tracks over route 30, that state. About 250 tons for Panama Canal have been placed. MacArthur Concrete Pile Co. is low on foundations for the department of justice office building, Washington.

Philadelphia—Awards are light but pending tonnage is fair-sized. Prices are unchanged at 1.50c to 1.60c, Pittsburgh. McCloskey & Co., Philadelphia, are closely identified with foundation work for two federal jobs, Washington, requiring possibly 1500 tons of steel.

Pittsburgh—Concrete bar inquiry, although still fairly active considering general conditions, is tapering moderately and incoming business is quieter than a month ago. Prices are expected to be continued into the fourth quarter on the basis of 1.60c for mill, and 1.75c for cut lengths.

Cleveland—Plans are expected out within a month on the White City sewage plant taking a large tonnage of reinforcing steel. Plans are also anticipated within two weeks for the submall development. Bids went in Sept. 22 on 930 tons for the Bedford, O., grade crossing elimination.

Chicago—Heavy shipments continue, chiefly on road and bridge work. Fresh inquiry has slackened. Billet prices vary in bids, and are in a range of 1.60c to 1.80c. Chicago sanitary district is buying more than 3000 tons for sewage treatment works in the Calumet district.

Awards Compared

	Tons
Awards this week	**2,554**
Awards last week	**11,239**
Awards two weeks ago	**5,649**
Awards this week in 1930	**13,179**
Av. weekly awards, 1930	**6,990**
Av. weekly awards, 1931	**6,957**
Av. weekly awards, August	**5,274**
Total awards to date, 1930	**269,664**
Total awards to date, 1931	**271,355**

Contracts Placed

430 tons, sewer, Ann Arbor, Mich., to Truscon Steel Co., Youngstown, O., through Bryant & Detwiler, contractors.
300 tons, grade separation work, Elmhurst, Ill., to Truscon Steel Co., Youngstown, O.
265 tons, garage, Syracuse Lighting Co., Syracuse, N. Y., to Kalman Steel Corp. division, Bethlehem Steel Co., Bethlehem, Pa.; Dawson Bros. Construction Co. Inc., Syracuse, contractor.
220 tons, school, Boston, to Truscon Steel Co., Youngstown, O.
150 tons, pier, Forty-sixth street, East river, New York, to McClintic-Mar-

(Concluded on Page 57)

Strip

Quieter Buying Follows Slight Gain Early in Month—Fourth Quarter Covering Is Slow

STRIP PRICES, PAGE 49

Pittsburgh—Strip demand has quieted following a slight gain in activity early in the month. Automotive orders are unimproved over August and little pickup is expected from that industry for at least another 30 days. Business from miscellaneous consumers also lacks improvement. A few fourth quarter contracts have been entered with prices steady at 1.55c and 1.65c for hot strip and 2.15c to 2.25c for cold-rolled strip. Interest in fourth quarter requirements generally is quiet. Mill operations still average around 20 per cent for hot mills and slightly less for cold mills. Production is spotty with some mills down completely during alternate weeks.

New York—Strip sellers look for a slight improvement over the remainder of this month, largely on the theory that the beginning of a new quarter generally brings out some increase in volume. In the main, however, buying is expected to be of a hand-to-mouth character. Hot-rolled is 1.55c and 1.65c, Pittsburgh, and cold-rolled 2.15c, Pittsburgh.

Philadelphia—Profound dullness marks the situation in steel strip. Prices are unchanged at 1.55c and 1.65c, Pittsburgh, for the two widths of hot-rolled and 2.15c, Pittsburgh, for cold-rolled.

Youngstown, O.—Lacking the usual impetus from auto builders, the strip trade here has sunk into the doldrums. There is the usual buying by some consumers but quantities are one-third to one-fifth those formerly purchased. Stripmakers here are operating around 20 to 30 per cent of capacity. Quotations are firm.

Cleveland—Inquiry for strip, especially hot-rolled, is undoubtedly the largest in three to six months. Due to automobile, specialty and general manufacturing lines a marked boost in number of inquiries has resulted. Little has developed into tonnage for rolling, but prospects are high. Hot-rolled continues at 1.55c and 1.65c, Pittsburgh base, on wide and narrow widths. Cold-rolled is sluggish at 2.15c to 2.25c, Cleveland.

Chicago—Cold-rolled strip specifications are low, while October schedules indicate only a moderate upturn for automotive account. Virtually no forward sales have been made and 2.15c, Pittsburgh-Cleveland, for fourth quarter cold-rolled contracts is untested.

Operations Hold Last Week's Level—32 Per Cent

Youngstown, O.—Steel operations are down two points this week to 39 per cent of capacity. Twenty-six of 66 open hearths were melting at the start of the week, against 27 a week ago. Since one company is considering suspending its activity in an open-hearth plant, fewer furnaces may be producing steel at the end of the week.

	Per Cent
Operations this week	32
Operations last week	32
Operations two weeks ago	28
Operations this week, 1930	55
High for 1931, (March 19)	57
Low for 1931, (Sept. 8)	28

Youngstown Sheet & Tube is operating on a 34 per cent basis while Republic Steel plants are 35 per cent active. Carnegie Steel operations are estimated at 40, against 50 per cent recently. Sharon Steel Hoop has one open hearth on. Finishing mill output is lower. Last week Sharon Steel's steel capacity was 34 per cent.

Philadelphia—Ingot output holds its one-point gain this week at 31 per cent activity. The leading interest is operating at the same figure.

Buffalo—Operations increased nine points this week to 41 per cent of capacity. In addition to the gain resulting from an "on" week in a works now operating on alternate six-day periods, two open-hearth furnaces which have been idle were placed on the producing list in another works, bringing to 17 the number of producing units.

Pittsburgh—Ingot operations are unchanged, continuing at 29 per cent, while pig iron production again has declined with the blowing out of two furnaces, leaving nine of 54 steelholds around 30 to 35, with tin plate slightly easier at 45 per cent. Strip is unchanged at 20 with pipe 25 to 30 per cent.

Cleveland—With the addition of two open hearths, one each in a district independent plant, ingot output has stepped up six points this week to 35 per cent rated capacity. The leading independent works runs five of 14 open hearths, the other, four of eight. In all, 12 furnaces are in production, against 10 last week.

Chicago—Ingot production is at 28, unchanged from a week ago. Nine of the district's 36 steelworks blast furnaces are active. The leading interest has five steelworks furnaces in blast.

Birmingham, Ala.—With eight and nine open-hearth furnaces producing steel, mill operations are continued at 30 per cent. Six furnaces are on at Fairfield, with Gulf States Steel still holding to three.

Warehouse Gains Not Up to Expectations

Warehouse Prices, Page 70

Chicago—In line with producer reductions in large structural rivets, warehouses have reduced round and cone-head rivets in keg lots $5 per ton, which brings the price to $3.75 per 100 pounds. Flat malleable washers also are reduced $1 per 100 pounds, making the price now $7. Bevel washers have been reduced on an average of about 1.00c to 1½c each. Wrought, cast iron and lock washers remain unchanged. Steel specifications from warehouse stocks are only slightly ahead of August.

New York—Volume is on a par with that of the last few weeks. September, thus far, has brought about little improvement. Prices are inclined to be easy, although officially unchanged.

Buffalo—Sales reflect the hand-to-mouth buying policies of most consumers. Demand to date in September has been slightly improved.

Pittsburgh—Changes in demand are slight and what improvement is noted so far this month is below expectations. Prices are unchanged and fairly steady.

Cleveland—A perceptible increase in orders is noted by some jobbers. The average size of shipments remains practically unchanged. Prices hold without change.

Cincinnati—Tonnage of warehouses here will exceed that of August but the upturn will fall below expectation. Prices are steady.

St. Louis—Moderate improvement in volume is noted by several interests since the holidays.

Concrete Bars Placed

(*Concluded from Page* 53)

shall Corp., Bethlehem, Pa., through Wilcox Construction Co.

129 tons, highway work, Garfield county, Colo., to unnamed interest.

125 tons, forest products laboratory for United States department of agriculture, at Madison, Wis., to Truscon Steel Co., Youngstown, O.

120 tons, substructure, bridge, Massachusetts, department of public works, to Kalman Steel Corp. division, Bethlehem Steel Co., Bethlehem, Pa.; Simpson Bros., Boston, contractors. American Bridge Co., Pittsburgh, awarded 50 tons, structurals.

115 tons, sewer, Grand Rapids, Mich., to Kalman Steel Corp., Bethlehem, Pa.

100 tons, office building, Johnson Securities Co., Commonwealth avenue, Boston, to Concrete Steel Co., New York; Chase & Gilbert, Boston, contractors.

100 tons, Illinois road work, to Concrete Engineering Co., Omaha, Nebr.

100 tons, bridges, state highway project, Queens (New York), to Truscon Steel Co., Youngstown, O.; Johnson, Drake & Piper Co., contractor.

100 tons, bridges, state highway project, Queens (New York), to Fireproof Products Co., New York.

100 tons or more, addition to Emanuel hospital, Portland, Oreg., to Soule Steel Co., Portland.

100 tons or more, Warwick and Garrison lane bridges, Baltimore, to American Steel Engineering Co., Philadelphia; Catalano & Pecora Construction Co., Baltimore, contractor.

100 tons, paving, Belleville, N. J., to Truscon Steel Co., Youngstown, O., through Franklin Contracting Co.

Contracts Pending

900 tons, sewage plant, Findlay, O.; A. Bentley & Sons, Toledo, O., reported low on general contract.

900 tons, foundation, interstate commerce building, Washington; McCloskey & Co., Philadelphia, contractor.

542 tons, highway work, San Mateo county, Calif.; bids Sept. 30.

400 tons, navy hangar, Sunnyvale, Calif.; bids Sept. 23.

400 tons, pier, Providence, R. I.

350 tons, Summer avenue bridge over Union railroad, near Bingham, Tenn.; general contract to S. & W. Construction Co., Memphis, Tenn.

326 tons, highway work, Los Angeles county, Calif.; bids Sept. 30.

236 tons, Lincoln viaduct, San Francisco; bids opened.

223 tons, paving, San Luis Obispo county, Calif.; bids Sept. 30.

200 tons, section J, Sawmill sewer, Westchester county, N. Y.; A. Gregorio, contractor.

200 tons, Spruce street bridge, Passaic river, Paterson, N. J.

200 tons, health center, San Francisco; bids being taken.

200 tons, postoffice, Washington; McCloskey & Co., Philadelphia, low on foundation contract.

186 tons, San Gabriel river outlet project, Los Angeles; Los Angeles Iron & Steel Co., Los Angeles, low.

185 tons, Los Angeles river protective work; Concrete Engineering Co., Los Angeles, low.

150 tons, coal breaker, Philadelphia & Reading Coal & Iron Co., St. Nicholas, Pa.

140 tons, courthouse, Clarksburg, W. Va.; Hutter Construction Co., Fond du Lac, Wis., contractor.

125 tons, grandstand addition, race track, Cicero, Ill.; Hanson Bros., Chicago, contractors.

110 tons, foundation, Wills eye hospital, Philadelphia.

102 tons storm sewer and culvert Oakland, Calif.; bids opened.

Unstated tonnage, Lafayette avenue bridge over Pennsylvania railroad, Baltimore; award expected Sept. 23.

Unstated tonnage, either 300 tons reinforcing pipe, 300 tons sheet piling, or 200 tons reinforcing bars, foundation, Franklin institute, Philadelphia.

Sheet Sales and Output Reduced in August

Sheet sales, production and shipments in August, reported by the National Association of Flat Rolled Steel Manufacturers, Cleveland, were lower than in July. Total sales, 122,849 net tons, averaged 3963 tons daily, a reduction of 15 per cent. Production, to 123,752 tons, averaged 3992 tons, down 29 per cent; and shipments, aggregating 151,529 tons, were at a daily rate of 5017 tons, a loss of 12 per cent.

Unfilled tonnage as of Sept. 1 was 170,122 tons, compared with 203,358 tons Aug. 1. Total sheet capacity in the United States for August was approximately 525,100 tons, and the capacity on which the association's figures are based is 354,960 tons.

Colorado plans to rebuild its automobile license plate plant at the state penitentiary, which burned in 1929.

Pipe

Cast More Active—4855 Tons For Los Angeles Placed—Line Buying Absent

PIPE PRICES, PAGE 70

Chicago—Rush buying of several municipalities in the North Central states has added slightly to recent cast pressure pipe business. General contracts have been awarded for the Chicago sanitary district miscellaneous sewage treatment pipe in the Calumet district, one project covering 2500 tons and another 1000 tons. Marshfield, Wis., will take bids this week on 2100 feet of 12-inch. Ironwood, Mich., has received bids on 3480 feet of 6, 8 and 10-inch. Prices are nominal on municipal work.

Boston—About 500 tons of cast pipe were contracted for in the past week, and another similar tonnage is pending. Donaldson Iron Co. took two contracts. Bids closed Sept. 21 for 500 tons of 12 and 16-inch cast for Hartford, Conn.

Pittsburgh—Line pipe is quiet as a result of the closing on several large projects recently, leaving few active jobs pending. Standard pipe demand has experienced only a mild seasonal upturn.

Cleveland—About 2500 tons of 48 to 54-inch steel pipe for Belvoir boulevard has been awarded.

Birmingham, Ala.—Pipe shop operations are under 40 per cent. Quotations are weak but prices do not develop business. Lettings recently have been light.

Cast Pipe Placed

4855 tons, 8 and 12-inch class 110, Los Angeles, to R. D. Wood & Co., Florence, N. J.

400 tons, 16-inch, Beverly, Mass., to Donaldson Iron Co., Emaus, Pa.

110 tons, 6 and 8-inch, Natick, Mass., to Donaldson Iron Co., Emaus, Pa.

100 tons, various sizes, fittings and hydrants, state public welfare commission, Howard, R. I., to Rhode Island Supply & Sprinkler Co., Providence, R. I.

Steel Pipe Placed

2500 tons, 48 and 54-inch steel pipe, Belvoir boulevard development, Cleveland and Shaker Heights, O., to Farrar & Trefts Inc., Buffalo, through Curro & Whitaker, Cleveland, contractors.

600 tons, 6⅝ to 10¾-inch line pipe for Pennsylvania Power & Light Co., Allentown, Pa., reported placed with National Tube Co., Pittsburgh.

Cast Pipe Pending

3480 feet, comprising 1380 feet of 6-inch, 1800 feet of 8-inch, and 300 feet of 10-inch, for Ironwood, Mich.; bids in.

2100 feet, 12-inch pipe for Marshfield, Wis.; bids Sept. 24.

1960 tons, 24 to 54-inch class C, Milwaukee; United States Pipe & Foundry Co., East Burlington, N. J., low at $34 a ton if awarded entire contract, otherwise $36 to $40; R. D. Wood & Co., Florence, N. J., bid $35 on 24-inch and 36-inch, $45.40 on 48-inch and $35.70 on 54-inch. Lynchburg Pipe & Foundry Co., Lynchburg, Va., bid $38.40; and James B. Clow & Son, Chicago, $39.40.

500 tons up to 12-inch, Spencerport, N. Y.; bids Sept. 29.

347 tons, 4 to 10-inch class 150, Fresno, Calif.; bids opened.

500 tons, 12 and 16-inch, Hartford, Conn.; bids closed Sept. 21.

Steel Pipe Pending

200 tons, steel and wrought pipe, Pennsylvania railroad Thirtieth street station, Philadelphia; W. G. Cornell Contracting Co., Philadelphia, contractor.

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WYCo STEELS

Railroads

Mill Specifications Down—Chesapeake & Ohio, Only Rail Inquiry Issued

TRACK MATERIAL PRICES, PAGE 49

New York—Car and locomotive demand continues negligible. Little rail inquiry is in prospect for the immediate district. New York Central, which normally comes into the market around October, and which last year did not come in until December is not expected to show interest before January. Last year it ordered approximately 175,000 tons of rails, but at present is behind on specifications. Meanwhile, this railroad is taking 2300 tons of plates, shapes and bars for cars to be built in its own shops and is opening bids on Sept. 30 on a similar tonnage for special needs.

Philadelphia—Pennsylvania railroad's rail inquiry involving possibly 150,000 tons may not be issued before November, according to present indications. Rail laying programs of the railroads are generally behind schedules.

Pittsburgh—New York Central railroad is closing bids Sept. 30 on fourth-quarter requirements of various steel products. It also has placed orders against its recent inquiry for material to be used in building 300 freight cars. Inquiry otherwise is light, no requests having been received in this district for bids on track material to accompany several rail inquiries now pending.

Buffalo—Delaware Lackawanna & Western has issued orders for 3000 tons of 130-pound rails to be rolled starting next week at the Lackawanna plant of the Bethlehen Steel Co. This order and other pending inquiry announced this week leads producers here to hope rail mill schedules may be expanded within the next few weeks.

Cleveland—Contrary to previously circulated reports, the Erie railroad has not issued inquiry for 1932 rail needs, reported by several to be 26,000 tons. In fact, it is reliably understood that the 1932 rail inquiry may not be issued at all. As reported in STEEL, last week the only pending rail item for figuring from the carriers in this district is the 30,000 tons for the Chesapeake & Ohio. Fourth-quarter inquiries for bars, plates and shapes from the Chesapeake & Ohio, Erie, and Big Four have just been issued.

Chicago—Disappointing rail releases in the last ten days, following three to four weeks of brisk specifications, may force down rail mill production for a while. Activity now is less than 20 per cent, and it is indicated that no important releases are in the offing. The next week may see a shutdown of rail mill operations for the first time in more than a year. Track accessory releases have dropped in proportion. No rail inquiries are before the market here and no promise of early buying has been given. It is indicated railroad activity must await the outcome of the freight rate decision in Washington.

Car Orders Placed

Alaska Railway, department of the interior, Washington, 10 hopper bottom, used, 110,000 pounds capacity each, with a Pennsylvania railroad subsidiary, Butler, Pa., through New York broker.

Locomotives Placed

Missouri Pacific, one 30-ton gasoline locomotive to Plymouth Locomotive Works, Plymouth, O.

Rail Orders Placed

Delaware, Lackawanna & Western, 3000 tons of 130-pound rails, to Bethlehem Steel Co., Bethlehem, Pa.

Car Orders Pending

United States navy, three 40-ton flat cars and repairs to eight flat cars, bids asked.

Rail Orders Pending

United States engineers, 855 tons, 75-pound relay rails for Columbia river jetty improvement, Washington; Columbia Contract Co., Portland, Oreg., contractor.

Wire Demand Makes Small Gain—Jobbers Take More

Wire Prices, Page 49

Chicago—While no significant test has been given to wire products' prices, small forward orders are being placed at $1.95 for wire nails, and 2.25c, Chicago or western mills, for plain wire. Expected improvement in merchant wire demand has failed to materialize.

Army engineers Corps, Washington, announces the following awards: 103,000 pounds galvanized wire for Memphis, Keystone Steel & Wire Co., $4.20 f.o.b. Peoria, Ill.

Worcester, Mass.—Wire shows little change. In addition to the wage cut, expected to be announced soon, manufacturers for several weeks have been making wage and salary adjustments and are expecting to reduce prices if a general cut is announced.

New York—Wire and nail sales reflect little improvement. Prices are steady at $1.90, Pittsburgh, for nails, and 2.20c for plain bright wire. Wire Rope Corp. of America, New Haven, Conn., has been awarded 10,000 feet 1-inch wire rope for the United States engineer, Jacksonville, Fla., bidding 16 cents. The same company was low on 10,000 feet of ¾-inch wire rope at 10.5 cents, material to come in 1000-foot reels.

Pittsburgh—Demand for wire products from jobbers continues slightly improved over the August rate, while activity in manufacturer's wire is quiet and unchanged. Gain in jobbing products is seasonal. Placing of fourth quarter contracts is slow. Standard wire nails are $1.90 to jobbers, plain wire 2.20c and wire rods $35.

Cleveland—Both operations and sales of the local wire interest hold to a fairly steady minimum. Orders have recently displayed a stronger tone and prices are firmer. Nails are stedy at $1.90 a keg minimum, plain wire to the manufacturing trade is 2.20c, and rods are $35 a ton. Fourth-quarter interest is light.

Nut, Bolt, Rivet Orders Exceed August Rate

Bolts, Nuts, Rivets Prices, Page 49

Pittsburgh—Fourth quarter contracts for bolts, nuts and rivets are being issued with prices unchanged from recent levels of 73 and 10 off for bolts and nuts, 2.50c for large rivets and 70, 10 and 5 off for small rivets. Specifications so far this month are slightly ahead of the Auguest rate but the improvement is less than seasonal. Operations continue around 30 per cent.

Cleveland—Fourth quarter books are open at unchanged prices. Current orders are restricted. Pending lots are conspicuously absent.

Chicago—Regular buyers of bolts and semifinished nuts are slower to contract for fourth quarter. Few contracts for bolts have been signed, owing to lower prices quoted recently, and the 73 and 10 per cent discount is regarded as nominal. Rivet prices are steady.

From 1911 to 1930 the average tractive power per steam locomotive increased from 28,305 pounds to 44,500 pounds.

Raw Material Prices

Pig Iron

Per Gross Ton

FOUNDRY, No. 2

Chicago furnace	$17.50
Pittsburgh, dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Valley furnace	17.00
Cleveland fur., local del.	17.00
Philadelphia, delivered	16.76 to 17.26
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	17.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.90 to 20.40
Buff., all-rail, Newark	18.28 to 18.78
Ala., Bir. fur., local del.	12.00
Alabama, del. Chicago	17.01
Alabama, del. St. Louis	15.42
Alabama, del. Cincinnati	14.69 to 15.19
Ala., Phila., dock del.	16.00 to 16.25
Ala., Balt., dock del.	16.00
Alabama, New York dock	16.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	14.69 to 15.19
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	17.50
Buff., all-rail, Brooklyn	20.90 to 21.40
Buffalo, all-rail Newark	18.78 to 19.28
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila	17.26 to 17.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	18.50
Eastern, del. Phila.	17.76 to 18.26

MALLEABLE

Valley furnace	17.00
Cleveland fur., local del.	17.00
Pittsburgh dist. fur.	17.50
Pittsburgh, delivered	18.13 to 18.63
Chicago, furnace	17.50
Buffalo fur., local del.	17.50
Eastern Penna., delivered	18.26 to 20.41
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	16.00 to 16.50
Pittsburgh, delivered	16.63 to 17.63
Eastern Penn., del.	16.50
Buffalo fur., local del.	16.50 to 17.00
Montreal, delivered	20.50
Valley, furnace	17.00

BESSEMER

Valley furnace	17.00
Pittsburgh, delivered	18.13 to 18.63
Pittsburgh, furnace	17.50

LOW PHOS.

Valley fur., standard	27.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	16.50
Pittsburgh district fur.	17.00
Pittsburgh, delivered	17.63 to 18.13

CHARCOAL

Lake Superior, del. Chi.	25.04

SILVERY

Jackson County, O., fur. in per cents: 6—$20; 7—$20.50; 8—$21; 9—$21.50; 10—$22; 11—$23; 12—$24; 13—$26.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.40 to 2.50
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.70 to 9.10
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens, Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	10.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% manganese	10.00
North African low phosphorus	8.50
Swedish basic, 65%	9.00
Swedish low phos.	10.00
Spanish, North African basic, 50 to 60%	8.50 to 9.00
Newfoundland fdy., 55%	8.50
Tungsten, spot and future short ton unit, duty paid	$11.25 to $11.50
Chrome ore, 48% net ton c.i.f.	$21.50 to 22.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	26 to 28 cents
South African, 52%	26 to 28 cents
South African, 49-51%	25 to 26 cents
South African, 44-47%	24 cents
Indian, 48-50%	nom.
Brazilian, 46-48% (nom.)	22 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$40.00
Missouri	37.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 35.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	40.00
Joliet, Ill., East Chicago, Ind.	49.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$65.00

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net ton, Chester, Pa., and Balt. base, 9 x 4½ x 2½	45.00

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$29.00
Pittsburgh, bessemer	29.00
Youngstown	29.00
Cleveland	29.00
Philadelphia	34.30
Chicago	30.00
Forging, Chicago	35.00 to 36.00
Forging, Pittsburgh	35.00
Forging, Philadelphia	39.30

SHEET BARS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00
Chicago	30.00

SLABS

Pittsburgh	29.00
Youngstown	29.00
Cleveland	29.00

WIRE RODS

Pittsburgh, Cleveland	35.00
Chicago	36.00

SKELP

All grades, Pittsburgh	1.60c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$85.00
*Ferromanganese, del. Pittsburgh	89.79
Spiegeleisen, 19-20%, domestic fur. spot†	30.00
Ferrosilicon, 50 per cent, freight all., c. l.	83.50
Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb., con. del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	150.00
Do, one-ton to c. l.	170.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent, per lb.	$1.00
Cal. Molybdate, lb. cont.	.85

†Carloads. Differentials apply to quant.
*To users of carloads to 500 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel Kentucky and Illinois mines, per net ton	$13.00
Washed gravel, import duty paid east, tide, gross ton	18.50

There's ECONOMY, *too, in using* SCALE FREE PIPE!

Economy, and not mere good looks commends the scale free process by which NATIONAL Pipe (butt-weld sizes ½ to 3-inch) is made clean and smooth—free from scale. The impression of uniformity and integrity that you receive in looking at this finely finished pipe is borne out in the character of its structure and by experience in service.

Pipe thus freed from mill-scale is less subject to corrosion, especially pitting. It will retain galvanizing or other protective coats more firmly. It will convey a larger flow of liquid or gas; and it reduces clogging of valves and small openings because there is no foreign substance to come loose and cause obstruction. Moreover, the processes that make it clean and scale free, heighten the strength at the welds, which may be important if bending, coiling or other special manipulation has to be done.

The manufacturers take pride in the fine appearance of this pipe but they take much greater pride in the durability and economy which this appearance truly denotes and which has made NATIONAL—

America's Standard Wrought Pipe

NATIONAL TUBE COMPANY, Pittsburgh, Pa.

Subsidiary of United States Steel Corporation

NATIONAL SCALE FREE PIPE

SPELLERIZED

Pig Iron

Current Sales Light—Fourth Quarter Contracting Is Lacking in volume—Virginia Iron Lower

PIG IRON PRICES, PAGE 60

Pittsburgh—Shipments of pig iron show a slow seasonal expansion. Foundry operations still are sharply depressed, necessitating little new business. Most orders take a maximum of a few carloads at a time, an exception being 1000 tons of low phosphorus iron placed recently. Inquiry is quiet. Prices are practically untested.

Boston—New England foundries continue to operate on a limited scale, not more than two days in most instances. Pig iron sales in the past week did not exceed 1000 tons.

New York—Sales of pig iron in this district in the past week total 4000 tons, against 2000 tons in the week preceding. One lot of 1000 tons of No. 2 plain foundry, and another of 500 tons of No. 2X are reported to have been placed with Buffalo furnaces. Usual prices are $15 to $15.50, base, furnace, for Buffalo iron, and $15.75 to $16.25, furnace, for eastern Pennsylvania iron.

Philadelphia—Reports persist that New Jersey pipemakers have placed a fair tonnage of iron, but general business in this district is light. Eastern Pennsylvania foundry iron usually is selling at $16 to $16.50, base, furnace. Occasional lots of Virginia iron are going at $17.50, furnace. One eastern Pennsylvania furnace is expected to go out early in October.

Buffalo—Demand is less active this week, but a considerable number of small orders are being booked for immediate shipment. Barge iron continues to move to the seaboard. An inquiry is pending for about 500 tons of malleable for an eastern melter. Reports that two Buffalo producers contemplate increasing operations soon are officially denied, stocks being ample.

Youngstown, O.—Small lots of No. 2 foundry and malleable iron are being sold. Despite some competitive iron coming into the valley from a Cleveland steelmaker, sold at privately negotiated prices, the leading valley producer continues to obtain $17, valley, for foundry, basic, bessemer and malleable.

Cleveland—Shipments continue fairly satisfactory, and still are ahead of the August rate, but sales have shown a steadily diminishing tendency thus far in September. Buying is restricted to carloads or a few hundred tons at a time, and no inquiries are appearing for fourth quarter. Cleveland furnace companies report sales amounting in all to 3000 tons in the past week. Foundries making toys for the Christmas trade are taking more iron than recently. Prices are untested, makers saying their would be no incentive to reduce them. Nominal quotations for delivery in southern and western Ohio and northern Indiana remain $16 to $17, base, lake furnaces, and for delivery in Cleveland, base $17, Cleveland furnace.

Cincinnati—New bookings show no improvement, although shipments have gained. Southern furnaces are firm at $11, base, Birmingham, on an inquiry for 700 to 1000 tons which has been pending several weeks. An inquiry for 500 tons of northern iron for a southern Ohio melter is current.

Chicago—Scattered inquiry for the fourth quarter shows moderate improvement. Foundry and malleable base grades are quoted $17.50, Chicago furnace, despite occasional lower offers on small amounts of steelworks iron. Furnace stocks continue to pile up, though merchant output remains at about 35 per cent. September shipments are gaining slightly over August.

St. Louis—Hot weather is retarding foundry operations, and demand for pig iron is quiet. Stove plants are operating three to five days a week; some of them would be busier if it were not for unseasonable weather. A stove manufacturer offered to pay $10.50 per ton, base, furnace for 100 tons of southern iron, but makers declined to go below $11.

Birmingham, Ala.—A few inquiries are being received from the Middle West and the Atlantic coast states. Sales, however, remain small. Indications point to a larger volume of business in October.

Toronto, Ont.—Melters are restricting purchases to current needs. Production is unchanged at about 32 per cent, yet producers have good stocks. Prices are steady.

Ferromanganese Demand Improved Slightly in East

Ferroalloy Prices, Page 60

Pittsburgh—Shipments of ferroalloys show but little change from the August rate. Consumption of ferromanganese and spiegeleisen continues sharply depressed and activity in other ferroalloys also has been fairly steady at a low rate. Little buying is appearing in the spot market, with prices unchanged. Ferromanganese continues $89.79, delivered, with spiegeleisen $30, furnace.

New York—Specifications for ferromanganese are slightly improved, with the market unchanged at $85, duty paid, for material in car lots. Domestic spiegeleisen, 19 to 21 per cent, is unchanged at $30, furnace.

Semifinished Prices Likely To Be Reaffirmed

Semifinished Prices, Page 60

Pittsburgh — Little interest is shown in fourth quarter contracts for semifinished steel, and producers have had few occasions to quote prices for that period. The market is expected to continue on the basis of recent quotations of $29 for rerolling billets, slabs and sheet bars, with forging billets and wire rods $35.

Youngstown, O.—With irregular operation of strip and sheet mills, sales of semifinished steel continue sporadic. No consuming mill is carrying stocks. The price holds at $29, Youngstown or Pittsburgh, for billets, sheet bars and slabs.

Cleveland—Shipments of sheet bars, billets and slabs by the leading merchant producer here are about 10 per cent ahead of the comparable period last month. Another open hearth has been started, five now being active of a battery of 14. Prices hold at $29, base, Cleveland and Youngstown, O., with no contracting for fourth quarter in sight.

Tin Plate Demand Steady; Mills at 45 Per Cent

Tin Plate Prices, Page 49

Pittsburgh—Shipments of tin plate are fairly well sustained, but new busines is light and mills as yet have not benefited from specifications for material to be rolled in anticipation for future requirements. Production remains around 45 per cent and is fairly steady at that level, one producer reporting an increase of several points for the week. The decline in export business and requirements of general line can producers accounts for the larger portion of the decrease in tin plate production compared with last year. The pack of tomatoes is expected to be considerably smaller than last year, as in the case in peas.

Scrap

Dull Trading Leaves Prices at Former Level—Producers Hold Tonnage for Better Quotations

Chicago—Steel scrap prices are withstanding weakness in eastern markets, due chiefly to unwillingness of a number of producers and most of the western railroads to offer scrap at the existing low prices. Several thousand tons offered by the St. Paul railroad last week actually did not go to the open market, as most of the material was due on prior purchase contracts with dealers and brokers. The fact that so little scrap actually is coming out loses some of the significance it otherwise would have by the fact that shipments to melters are so low. Heavy melting steel remains quiet at $8 to $8.50. Sales of some specialty grades, including low phos plate scrap, have been made at advances of about 25 cents, although inquiry is negligible.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.50 to 8.50
Boston, dealers	4.10 to 4.60
Buffalo, No. 1	9.00 to 9.50
Buffalo, No. 2	7.75 to 8.25
Chicago	8.00 to 8.50
Cinci., deal.	7.25 to 7.75
Cleve., No. 1	8.50 to 9.00
Cleve., No. 2	7.50 to 8.00
Det., No. 1 deal.	6.50 to 7.00
Det., No. 2 deal.	5.00 to 5.50
E. Pa. del. mill	8.00 to 9.00
N. Y. deal. R. R.	5.00 to 6.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	4.00 to 4.50
Pitts., No. 1	10.50 to 11.00
St. L. No. 1 sel.	8.00 to 8.20
Federal, Ill.	7.75 to 8.25
Granite City, Ill.	7.00 to 7.50
Valleys, No. 1	10.25 to 10.75

COMPRESSED SHEETS

Buffalo, dealers	7.75 to 8.25
Chi., (Factory)	7.00 to 7.50
Cleveland	7.50 to 7.75
Detroit, dealers	6.50 to 7.00
E. Pa. new mat.	8.00 to 9.00
Pittsburgh	10.50 to 11.00
Valleys	9.50 to 10.00

BUNDLED SHEETS

Buffalo	5.50 to 6.00
Cinci., deal.	6.75 to 7.25
Cleveland	6.50 to 7.00
Eastern Pa.	6.50 to 7.00
Pittsburgh	9.75 to 10.25
St. Louis	5.00 to 5.50

SHEET CLIPPINGS LOOSE

Chicago	4.00 to 4.50
Cincinnati	4.00 to 4.50
Detroit, dealers	3.50 to 4.00
St. Louis	5.00 to 5.50

STEEL RAILS SHORT

Birmingham	10.75 to 11.50
Boston, dealers	3.10 to 4.60
Buffalo	12.00 to 12.50
Chicago (3 ft.)	10.00 to 10.50
Chicago (2 ft.)	10.75 to 11.25
Cinci., deal.	12.50 to 13.00
Detroit, deal.	11.00 to 11.50
Pitts. (open-hearth, 3 ft. and less)	12.50 to 13.00
St. Louis	12.00 to 12.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	5.00 to 5.50
Buffalo	8.25 to 8.50
Chicago, net	7.00 to 7.50
Cinci., deal. net	4.50 to 5.00
Det., net deal.	4.00 to 4.50
Eastern Pa.	7.50 to 8.00
N. Y., deal. mill	4.75 to 5.50
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	11.00 to 11.50
Chicago	9.25 to 9.75
Eastern Pa.	13.00
Pittsburgh	12.00 to 12.50
St. Louis	8.50 to 9.00

ANGLE BARS—STEEL

Chicago	9.25 to 9.75
St. Louis	7.50 to 8.00

LOW PHOSPHORUS

Buffalo, billets and bloom crops	12.75 to 13.25
Cleveland bil. and bloom crops	12.00 to 12.50
Eastern Pa.	13.50 to 14.00
Pittsburgh billet bloom crops	14.00 to 14.50
Pitts. sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	8.50 to 9.00
St. Louis	8.50 to 9.00

SHOVELING STEEL

Chicago	8.00 to 8.50
Cleveland	6.50 to 7.00
St. Louis	7.75 to 8.25

RAILROAD WROUGHT

Birmingham	7.50 to 8.00
Boston, dealers	8.00 to 8.50
Buffalo, No. 1	7.00 to 7.50
Buffalo, No. 2	9.00 to 9.50
Chicago, No. 1	8.00 to 8.40
Chicago, No. 2	8.00 to 8.50
Cinci., No. 2	7.25 to 7.75
Eastern Pa.	9.50 to 10.00
N. Y., No. 1, deal.	9.00 to 9.50
Pitts., No. 2	10.50 to 11.00
St. Louis, No. 1	5.00 to 5.50
St. Louis, No. 2	7.75 to 8.25

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	10.00 to 10.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	7.75 to 8.25
Chicago, No. 1	6.75 to 7.25
Cinn., No. 1 dl.	6.00 to 6.50
Cinn., No. 2	3.50 to 4.00
Cleve., No. 2	6.25 to 6.75
Det., No. 1 new deal.	5.25 to 5.75
St. L., No. 1	6.00 to 6.50
Val. new No. 1	9.25 to 9.75

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.75 to 2.00
Buffalo	4.75 to 5.25
Chicago	4.25 to 4.75
Cinn., deal.	3.75 to 4.25
Cleveland	5.00 to 5.50
Detroit	3.75 to 4.25
Eastern Pa.	5.00 to 6.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.50 to 8.00
St. Louis	3.00 to 3.50
Valleys	7.75 to 8.25

BORINGS AND TURNINGS
For Blast Furnace Use

Boston	1.50 to 1.75
Buffalo	6.00 to 6.50
Cinn., deal.	4.50 to 5.00
Cleveland	6.50 to 7.00
Detroit, deal.	4.75 to 5.25
Eastern Pa.	5.50
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.25 to 7.75

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	7.00 to 7.25
Boston, deal.	1.50 to 1.75
Buffalo	6.00 to 6.50
Chicago	4.00 to 4.50
Cinn., deal.	3.75 to 4.25
Cleveland	6.50 to 7.00
Detroit, deal.	4.75 to 5.25
Eastern Pa.	5.00 to 6.00
E. Pa., chem.	10.50 to 12.00
N. Y., deal.	2.00 to 2.50
Pittsburgh	7.25 to 7.75
St. Louis	5.50 to 6.00

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	6.50 to 7.00
Chicago, net	5.75 to 6.25
Cincinnati	5.50 to 6.00
Eastern Pa.	7.50 to 8.00
N. Y., deal.	5.00 to 5.50
St. Louis	6.00 to 6.50

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	7.50 to 8.00
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.50 to 6.00

FORGE SCRAP

Boston, del.	2.00 to 2.25
Chicago	11.00 to 11.50
Eastern Pa., del.	8.00 to 8.50

ARCH BARS, TRANSOMS

Chicago, net	9.00 to 9.50
St. Louis	7.75 to 8.25

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	7.50 to 8.00
Chi., steelworks	7.00 to 7.50
Cleveland	6.75 to 7.00
Eastern Pa., del.	7.50 to 8.50
Pittsburgh	9.50 to 10.00
St. Louis	6.50 to 7.00

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 12.00
Buffalo	14.50 to 15.00
Chicago	12.90 to 13.45
Eastern Pa.	18.50 to 19.50
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	8.95 to 9.50
N. Y., deal.	9.00 to 9.50
St. Louis	9.00 to 9.50
E. Penna.	18.00

CAR WHEELS

Birming., iron	8.50 to 9.50
Boston, iron	14.00 to 14.50
Buffalo, iron	10.50 to 11.00
Buffalo, steel	11.00 to 11.50
Chicago, iron	9.50 to 10.00
Chi. rolled steel	9.50 to 10.00
Cincinnati, iron	9.50 to 10.00
E. Pa. steel	10.50 to 11.00
E. Pa. iron	12.50 to 13.00
Pitts. iron	11.00 to 11.50
Pitts., steel	12.00 to 12.50
St. Louis, iron	7.00 to 7.50
St. Louis, steel	8.50 to 9.00

NO. 1 CAST SCRAP

Birmingham	8.50 to 9.00
Buffalo (mach.)	10.25 to 10.75
Boston, textile	10.00 to 10.50
Chicago, mach.	9.80 to 10.35
Chi., railroad	8.70 to 9.25
Chicago, agri.	8.40 to 8.95
Cinn., mach. cup., gross	12.25 to 12.75
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa., cupola	12.50 to 13.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	12.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	8.50 to 9.00
St. L. No. 1	7.50 to 8.00

HEAVY CAST

Boston	10.50 to 11.00
Bos. mach. cast	11.50 to 12.50
Buffalo, break	6.75 to 7.25
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.50 to 11.00
Det., break., dl.	5.50 to 6.00
Eastern Pa.	10.00 to 10.50
N. Y. No. 1 dl.	7.00 to 7.50
N. Y., break, dl.	6.50 to 7.00
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	13.00 to 13.50
Buffalo	10.00 to 10.50
Chicago, agri.	8.00 to 8.50
Chicago, R. R.	8.50 to 9.00
Cinci., R. R. del.	10.25 to 10.75
Cinci., agri. del.	10.00 to 10.50
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.50 to 10.00
St. Louis, rail	6.75 to 7.25

RAILS FOR ROLLING
5 feet and over

Birmingham	10.50 to 11.00
Boston	7.50 to 8.00
Buffalo	10.00 to 10.50
Chicago	10.50 to 11.00
Eastern Pa.	11.50 to 12.00
New York	6.25 to 6.75
St. Louis	10.50 to 11.00

LOCOMOTIVE TIRES

Chicago, cut	11.00 to 11.50
St. L., No. 1	9.50 to 10.00

LOW PHOS. PUNCHINGS

Chicago	11.00 to 11.50
Buffalo	12.50 to 13.00
Eastern Pa.	13.00 to 14.00
Pittsburgh	13.50 to 14.00

WICKWIRE SPENCER
WISSCO PRODUCTS

When we make an affidavit

UPON request, the Wickwire Spencer Steel Company will make an affidavit as to the ultimate strength of wire rope in any reel it sells. The figures stated are not the theoretical estimates of a slide rule but figures produced by actual breaking of samples of the rope in question. Whether called for or not, pieces of rope are torn asunder on this mechanical Hercules at regular and frequent intervals. This is typical of the care employed by Wickwire Spencer in the production of quality Wire Rope.

WICKWIRE SPENCER STEEL COMPANY
41 East 42nd Street, New York City
Buffalo; Chicago; Detroit; Cleveland; Worcester; Philadelphia; Tulsa, 314 East Archer Street; Pacific Coast Headquarters: San Francisco; Branches and Warehouses: Los Angeles, Portland, Seattle

WICKWIRE SPENCER WIRE ROPE

WICKWIRE SPENCER WIRE ROPE

It is known that a number of buyers actually are ready to go into the market for material to cover early needs.

Boston—A few grades of steel and iron scrap have been marked down in line with readjustments to meet other price ranges. Sellers remain out of the market, while consumers see little prospect of improvement.

New York—Scrap prices are steadier but weak. Buying is light, mills taking little beyond immediate needs. Most melting steel bought in this territory continues to move to the Buffalo district by barge. No. 1 is nominal at $8.50, delivered eastern Pennsylvania. The Florence, N. J., foundry continues to take breakable cast at $10.

Philadelphia—Prices of steel and iron scrap are unchanged on light movement. Bethlehem Steel Co. has closed on 2000 tons of heavy melting steel for Sparrows Point and 1000 tons for Bethlehem at $8, delivered both points.

Buffalo—A district consumer has purchased a fairly large tonnage of No. 1 heavy melting steel, paying $9 to $9.50. Dealers believe much of the material was bought direct from railroads at $9.50. This consumer has been offering $9 for No. 1 scrap and $7.50 for No. 2 for several months without attracting tonnage. Otherwise the market is quiet and lacking in transactions. Receipts continue light.

Bethlehem Steel Co. has bought 3500 tons of heavy melting steel at $9 delivered, Lackawanna.

Pittsburgh—In the face of quiet buying the market for steel and iron scrap is steady. Some small sales of heavy melting steel have been made at $10.75, leaving the market unchanged, though based for most part on small transactions. Supplies are not plentiful at present prices.

Detroit—Both grades of heavy melting steel, new No. 1 busheling, and machine shop turnings are somewhat softer, but No. 2 busheling to a local blast furnace interest is up 25 cents a ton on a small purchase by this interest after absence of buying in this grade for about a year.

Cincinnati—Demand for borings, turings and clippings has made quotations somewhat firmer. Heavy melting steel and other grades of scrap are dull. Dealers held buying prices unchanged following reports of bids on a recent southern railroad list.

St. Louis—With sales of iron and steel scrap inadequate to test prices, dealers' quotations remain unchanged. Selling the past week or ten days to consumers has been in smaller volume than in any similar period this season.

Birmingham, Ala—Little steel and iron scrap is moving, purchases by melters being in small lots. Prices are unchanged but with one or two exceptions weakness is noted. Consumers buy only to cover business booked.

Toronto, Ont.—New business in iron and steel scrap was spotty and dull. Only small sales of steel scrap were made, while iron grades were silghtly brighter. No. 1 machinery cast is still featured and while stove plate and malleable grades also made a better showing. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Ore Companies Stopping Shipments; Stocks Down

Iron Ore Prices, Page 60

Cleveland—The Jones & Laughlin Steel Corp. has stopped shipping iron ore from its mines for the season. However, it still is taking some ore from other sources. Production from its own mines this season amounts to approximately 570,000 tons, compared with 1,275,000 tons last year. More companies will stop shipping from mines in October and the lake movement of ore will be practically concluded by November. Stocks at furnaces and Lake Erie docks Sept. 1 were only 133,189 tons larger than a year ago, according to the Lake Superior Iron Ore association. May 1 the stocks were 8,437,823 tons heavier than last year. The association's current report follows:

	Tons
Ore consumed in July	1,832,382
Ore consumed in August	1,652,247
Decrease in August	180,135
Ore consumed in August, 1930	3,673,161
Ore on hand at furnaces Sept. 1, 1931	29,385,450
Ore on Lake Erie docks Sept. 1, 1931	5,685,751
Total Sept. 1, 1931	35,071,201
Total Sept. 1, 1930	34,938,012

Coke

Demand for Foundry and Domestic Fuel Shows Slight Upward Trend—Prices Unchanged

COKE PRICES, PAGE 60

Pittsburgh—Seasonal influences are stimulating beehive coke activity, although shipments still are extremely light. The movement of furnace coke to water gas producers is beginning to increase, while some foundries are taking more fuel. Demand for domestic coke is retarded by warm weather, but is on the upgrade. Prices generally are unchanged.

New York—A slight improvement in the foundry melt is stimulating specifications. While still light, they are the best in several weeks. Beehive furnace coke remains $2 to $2.25, Connellsville, Pa., and the ordinary brands of beehive foundry coke are $3 and $3.25, Connellsville. Premium foundry brands are $4.50, Latrobe, Pa. Steadiness also is noted in by-product coke, the market being $8.70 to $9.10, Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Specifications for by-product foundry coke continue to improve over last month. Hot weather has curtailed sales of domestic grades. Foundry coke remains at $9, delivered, Cincinnati.

St. Louis—Specifications have failed to exceed the August average. Production is being held as low as possible, but stocks appear to have increased. Unusually warm weather is having an adverse effect on demand.

Birmingham, Ala.—Coke ouput has been further curtailed. Foundry fuel prices are steady, while domestic prices are weak.

Boston—Foundries are well supplied with coke for their limited operations, and the market is dull. Prices are unchanged.

Pacific Coast

Some Bar and Pipe Tonnages Placed in Generally Dull Market—Other Projects Pending Offer Some Future Business—Prices Are Soft and Shading Frequent in Some Lines

San Francisco—(*By Air Mail*)—Although demand has shown little improvement a number of structural steel and reinforced concrete bar tonnages have been placed.

Among new projects is an 8-mile pipe line for San Diego, Calif., plans for which are awaiting approval, and a concrete breakwater for Santa Monica, Calif., which will require over 1100 tons of reinforcing steel. Salt Lake City, Utah, is having plans prepared for a water system which will require close to 1000 tons of cast iron pipe.

Bars, Plates and Shapes

Bids will be opened Sept. 30 for over 1000 tons of reinforcing bars for three highway projects in California. Approximately 400 tons are involved in the new navy hangar at Sunnyvale, Calif., bids on which will be opened Sept. 23. Bids have been opened on 236 tons for the Lincoln viaduct, San Francisco. Pending business now exceeds 12,000 tons. Quotations continue at 1.85c to 1.95c c.i.f. coast ports.

The Wellman Engineering Co., Cleveland, booked 300 tons, mostly structural shapes for the new navy mooring mast at Sunnyvale, Calif. An unnamed interest took 175 tons for a bridge near Lay, Colo. Bids will be opened Sept. 30 for 1500 tons for the Islais Creek bridge, San Francisco, and 450 tons for Pier No. 23, for the same city. Bids will be opened on 626 tons of sheet steel piling for flood control work in Los Angeles county, Sept. 28. Plain shapes range between 2.05c and 2.15c c.i.f.

Other Finished Material

The only award of importance in cast iron pipe this week went to R. D. Wood & Co., 4855 tons of 8 and 12-inch pipe for Los Angeles. Bids have been opened on 347 tons of 4 to 10-inch pipe for Fresno, Calif. No pipe line inquiries of importance are up for figures at present. Movement of standard steel pipe continues to reflect the quiet conditions in the building field.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Seattle Markets Dull

Seattle—There is no change in general market conditions in the Pacific Northwest. Prices are not firm, demand is lacking and volume of turnover well below normal. Public works projects continue to furnish practically, the only outlet, as general construction and industrial activity are below the level of a year ago.

Bars, Plates and Shapes

Demand for merchant and concrete bars continues slow. Lettings have been in small tonnages. No projects of importance have developed and only three small jobs are pending. These include 200 tons for the Aurora bridge approach, Seattle, 130 tons for the reservoir at Wenatchee, Wash., and 100 tons for federal bridge projects in Oregon. Soule Steel Co., Portland, Oreg., has the subcontract for an unstated tonnage of reinforcing bars for the Emanuel hospital addition, Portland, Oreg.

Contract for fabricating 235 tons of plates for a 10,000-foot section of 18 to 28-inch diameter steel pipe for the United Water Co., Wenatchee, Wash., has been awarded to unnamed interests in Spokane. This is for an irrigation project. Seattle has appropriated $260,000 for an addition to the Cedar River pipe line, 66-inch diameter. Plans are preparing and it is expected bids will be invited within 30 days.

Structural awards totaled approximately 1000 tons this week but inquiry is slack and no important jobs are listed for early action. Business pending includes 240 tons of shapes, and 100 tons of concrete bars for three federal bridges in Oregon, bids for which have been opened. New bids have been asked Sept. 22 for an addition to McNeil Island federal prison, Wash., on which it was reported last week that Hofius Steel & Equipment Co., Seattle, had received the award to furnish about 100 tons of shapes. Moncrief & Vistaunet Ltd., 520 Shelly building, Vancouver, B. C., have the contract to erect a steel bridge over the Thompson river, Ashcroft, B. C., and the subcontract for 500 tons of shapes has been awarded to an unnamed interest. Poole & McGonigle, Portland, Oreg., have taken the contract for a steel span for the Spokane, Portland & Seattle railroad, in Adams county, Wash., involving 250 tons of shapes. For the addition to the state prison at Walla Walla, Fries & Sons, Covington, Ky., will furnish the equipment while Stewart Iron Works, Cincinnati, obtained the contract for the Wenatchee, Wash., city jail. Seattle has purchased from Harnischfeger Corp., Milwaukee, a 250-ton crane for the city light plant at Diablo.

Obituaries

(*Concluded from Page* 23)

half-century. Mr. Hoff, born in Norway, went to St. Paul when 20. He was associated with the St. Paul Harvester Works for several years, until 1885, when he founded the Lee-Hoff company.

□ □ □

Robert B. Whiteside, 75, pioneer timber and mining man, died at his home in Duluth, Sept. 19. Mr. Whiteside had been active in iron ore mining operations in northern Minnesota.

□ □ □

Thomas H. Symington, Baltimore financier and sportsman and head of Thomas H. Symington & Son, manufacturer of railway equipment, died in a hospital in New York, Sept. 20. He was 62 years of age.

□ □ □

Louis Bialosky, 71, who until his retirement 10 years ago was prominent in the Cleveland iron and steel scrap industry, as a member of Bialosky Bros., died Sept. 20 at Cleveland.

□ □ □

A. D. Quinn, 44, sales manager of the industrial division of the L. H. Gilmer Co., Philadelphia, died Sept. 17 while on a business trip to Chicago. In 1919 Mr. Quinn became associated with the Gilmer company, and in 1922 took charge of the industrial division.

□ □ □

Oscar S. Foster, 89, president of the Foster Bros. Mfg. Co., Utica, N. Y., died recently at Santa Barbara, Calif., where he resided since his retirement.

□ □ □

John A. Calder, 58, general factory manager of all plants of the Torrington Co., Torrington, Conn., died recently. He was a native of Norwood, Ont., and went to Torrington from Elyria, O., 24 years ago.

What's your "WASTE FUEL" *bill this year?*

[ARMSTRONG'S INSULATION CAN HELP CUT IT]

ARE you hunting wasted dollars? Seeking ways to cut down production and maintenance costs? If you are (and who isn't, these days?), consider what insulation can do to help you save fuel.

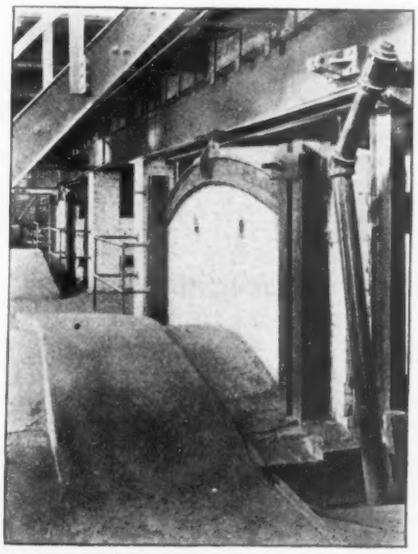
Records prove that Armstrong's and Nonpareil Insulating Brick have been responsible for fuel reductions ranging from 10% to 40%. These brick keep heat *inside* the furnace where it belongs. The dollars formerly lost by leakage through uninsulated or poorly insulated walls are now saved.

There's added economy in the fact that both Armstrong's and Nonpareil Insulating Brick are machine-sized. That means faster laying, with a tighter, more efficient wall. These brick can be laid up dry, saving labor and materials. And their salvage value is high—an additional saving.

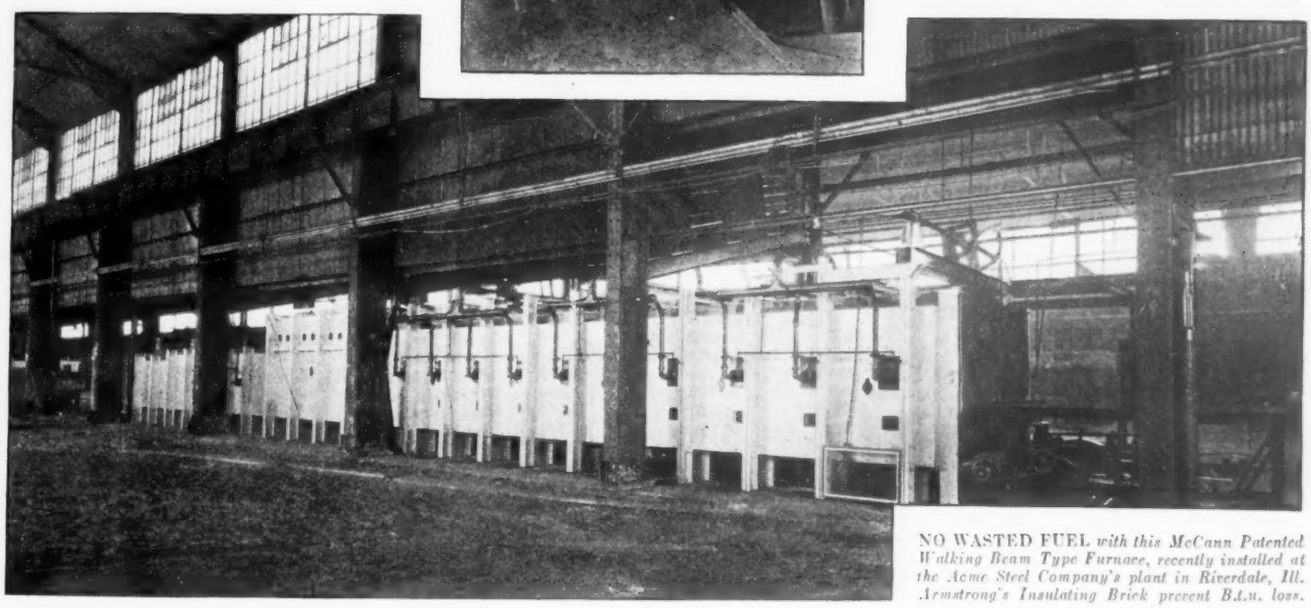
Armstrong's Insulating Brick serve efficiently for temperatures as high as 2500° F., behind the refractory, without warping or fusing. Nonpareil Insulating Brick withstand temperatures up to 1600° F. Both are light and strong for any type of construction. They are furnished in standard firebrick sizes, and in special shapes to order.

Armstrong engineers will gladly help you plan savings in your own plant with these brick. Samples of each will be sent on request. Armstrong Cork & Insulation Company, 920 Concord Street, Lancaster, Pennsylvania; Canadian offices in Montreal, Toronto, and Winnipeg.

Armstrong's Ⓐ Product



REGENERATORS OF THE *Hubbard Steel Foundry, East Chicago, Ind., where Armstrong's and Nonpareil Insulating Brick cut down fuel expense.*



NO WASTED FUEL *with this McCann Patented Walking Beam Type Furnace, recently installed at the Acme Steel Company's plant in Riverdale, Ill. Armstrong's Insulating Brick prevent B.t.u. loss.*

Armstrong's and Nonpareil Insulating Brick

FOR FURNACES, OVENS, KILNS, AND LEHRS

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload Discounts, f. o. b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½, 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir.	$33.00 to 35.00
Four-inch, Birmingham	37.00 to 39.00
Four-inch, Chicago	43.00 to 46.00
Six to 24-inch, Chicago	40.00 to 43.00
Six-inch and over, N. Y.	28.50 to 30.50
Four-inch, New York	34.50 to 36.50
Stand. fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	3.00c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.60c
Pittsburgh	2.60c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.60c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.50c-3.31c
Boston	3.10c-3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.40c
Los Ang. lcl.	2.70c
New York	2.65c-3.10c
Phila.	2.40c-3.00c
Pittsburgh	2.60c
San Fran. cl.	2.30c
San Fran. lcl.	2.50c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	3.00c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.50c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.50c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	3.15c
San Fran.	2.40c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.915c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.90c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	4.00c
Phila.*† (e)	3.05c
Pitts.**	2.60c to 2.85c
San Fran.	3.65c
Seattle	3.75c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.70c
Buffalo	3.70c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.60c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.55c
Pitts.**	3.40c
Portland	4.50c
San Fran.	4.15c
Seattle	4.25c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	5.45c
Buffalo	4.10c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	4.00c
Detroit	4.00c
Houston	5.40c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*† (e)	4.00c
Pitts.**	4.00c
Portland	5.00c
San Fran.	4.65c
Seattle	4.75c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.50c
Boston	3.75c-4.25c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.90c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.50c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.15c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.40c
Philadelphia*	3.40c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.65c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Clev. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
(d) Minus quant. diff.
(e) New mill classif.
‡Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 7.75c, Conn., for copper

Sheets	
Yellow brass (high)	15.00
Copper, hot rolled	17.12½
Lead, full sheets (cut ½c more)	8.25
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	19.75
Seamless copper	19.62½
Rods	
Yellow brass (high, full turnings)	13.25
Naval brass	14.37½
Anodes	
Copper, untrimmed	14.62½
Wire	
Yellow brass (high)	15.50

Old Metals

Dealers' buying prices, cents lb.

No. 1 Composition Red Brass	
New York	4.25 to 4.50
Chicago	4.00 to 4.50
Cleveland	4.50 to 4.75
St. Louis	4.00
Heavy Yellow Brass	
New York	2.75 to 3.00
Heavy Copper and Wire	
New York	5.25 to 5.50
Boston	4.75 to 5.00
Chicago	4.12½ to 4.37½
Cleveland	4.50 to 4.75
St. Louis	4.25 to 4.50
Composition Brass Borings	
New York	4.00 to 4.25
Yellow Brass Tubing	
Cleveland	2.75 to 3.00
Light Copper	
New York	4.25 to 4.50
Chicago	4.00 to 4.25
Cleveland	4.00 to 4.25
St. Louis	4.00
Light Brass	
Boston	2.50 to 2.75
Chicago	2.25 to 2.50
Cleveland	1.75 to 2.00
St. Louis	2.25
Zinc	
New York	1.25 to 1.50
Cleveland	1.25 to 1.50
St. Louis	1.50
Aluminum	
Clippings, soft, Cleveland	12.50 to 13.00
Clippings, hard, Cleveland	9.00 to 10.00
Borings, Cleveland	3.50 to 4.50
Mixed cast, Cleveland	4.00 to 4.50
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	4.00

Secondary Metals

Remelt aluminum No. 12	9.00 to 10.50
Brass ingots, 85-5-5-5	7.37½

Metals

Weakening Tendency Predominates With Copper Now at New Low—Tin and Zinc Lower

New York—A further weakening tendency predominated in the metal markets during the past week, particularly following the announcement of abandonment of the gold standard in Great Britain.

Copper has been offered by resellers at as low as 6.75c, Connecticut. Straits tin has declined approximately a cent and three-quarters from the level of last week. Zinc prices have dropped to new lows for recent weeks. Lead, however, has shown resistance to the downtrend.

Copper—The price has dropped an additional quarter-cent during the past week with metal available from custom smelters at 7.00c, delivered Connecticut. Second-hand metal for September delivery is being offered at 6.75c and for last quarter at 6.87½c. Producers remain out of the market but continue to quote 7.25c to their manufacturing subsidiaries. Copper and brass products and brass ingots have been placed on the basis of 7.25c copper. The official export quotation now is 7.50c c.i.f. European ports. Export demand recently has been light. Demand from domestic consumers remains light with an attitude of hesitancy predominating. Recent declines in copper are attributed to a further increase in copper stocks.

Tin—Straits metal showed a declining tendency during the past week. On announcement of the abandonment of the gold standard in England Monday the price dipped sharply to 23.25c. Tin showed somewhat more firmness at this level Tuesday, however. Straits tin has lost much of the gains made during recent weeks with quotations now standing more than two cents under a month ago. Further increase in stocks and failure of curtailment plans are contributing factors.

Zinc—Further weakness is shown in prime western zinc with the metal now available at 3.70c, East St. Louis. Trading in the domestic market has been quiet for several weeks with business confined usually to carlots. Stocks of zinc concentrates have been increasing steadily with the total at the close of the past week around 83,000 tons.

Lead—Demand from battery and paint makers this month shows a moderate increase. Quotations remain steady at levels which have not changed for more than two months. The metal has shown strong resistance to depressing influences.

Antimony—Prices are holding unchanged and fairly steady. Business is light.

Aluminum—Sales currently are light but quotations remain steady.

Benzol and Toluol Demand Ahead of Output

New York—Benzol supplies have reached a low point, several distributors being behind in delivery and slow to take on additional business with definite shipping date. The same situation is developing rapidly in toluol. While buying is not heavy, current demand is ahead of output. Prices are firm. Phenol and naphthalene are unchanged, with moderate volume in the former. Sulphate of ammonia is weak.

Coke By-Products

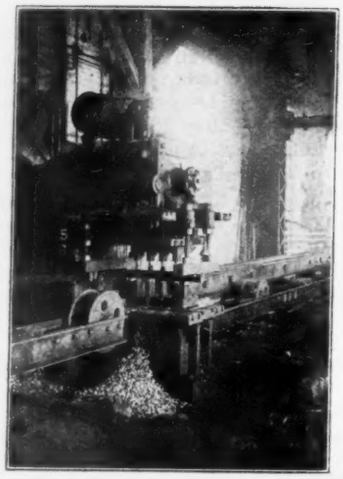
Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.18
90 per cent benzol	0.18
Toluol	0.27
Solvent naphtha	0.24
Commercial xylol	0.24
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.30

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
September 16	7.25	7.62½	7.00	25.00	25.37½	4.40	4.22½	3.75	22.90	6.50	35.00
September 17	7.00	7.37½	6.75	25.12½	25.45	4.40	4.22½	3.75	22.90	6.50	35.00
September 18	7.00	7.37½	6.75	24.87½	25.25	4.40	4.22½	3.75	22.90	6.50	35.00
September 19	7.00	7.37½	6.75	24.87½	25.25	4.40	4.22½	3.75	22.90	6.50	35.00
September 21	7.00	7.37½	6.75	23.25	23.62½	4.40	4.22½	3.72½	22.90	6.50	35.00
September 22	7.00	7.37½	6.75	23.25	23.50	4.40	4.22½	3.70	22.90	6.50	35.00

When the covered wagon passed out



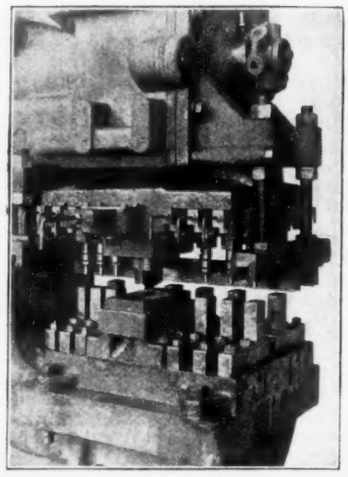
SMOOTH ribbons of steel replaced rough and ofttimes dangerous wagon tracks—the "iron-horse" came thundering along, blazing new trails with belching of smoke and sparks.

"Flying in the face of providence" at 20 miles an hour, these crude and awe inspiring forerunners of the present Limiteds inaugurated the "Iron and Steel Age" and helped to lay the foundation for one of the greatest industries of the country.

Constantly increased speeds and larger rolling stock, demanded more accurate and faster fabricating and Cleveland Engineers striving constantly to find new and better methods of punching, shearing, banding and planing, kept pace with the railroads' march of progress until today, railroad companies following the habit formed over a period of 50 years, usually consult Cleveland Engineers before specifying fabricating tools.

The illustration on the right shows an attachment for punching all holes in the webs of center sills, including elliptical holes for draft gear mechanism, at one setting.

The illustration on the left shows a gap machine on which the same attachment may be used with the added advantage of permitting the punching of the flanges of two center sills back to back.



THE CLEVELAND PUNCH & SHEAR WORKS CO.
CLEVELAND OHIO, U.S.A.

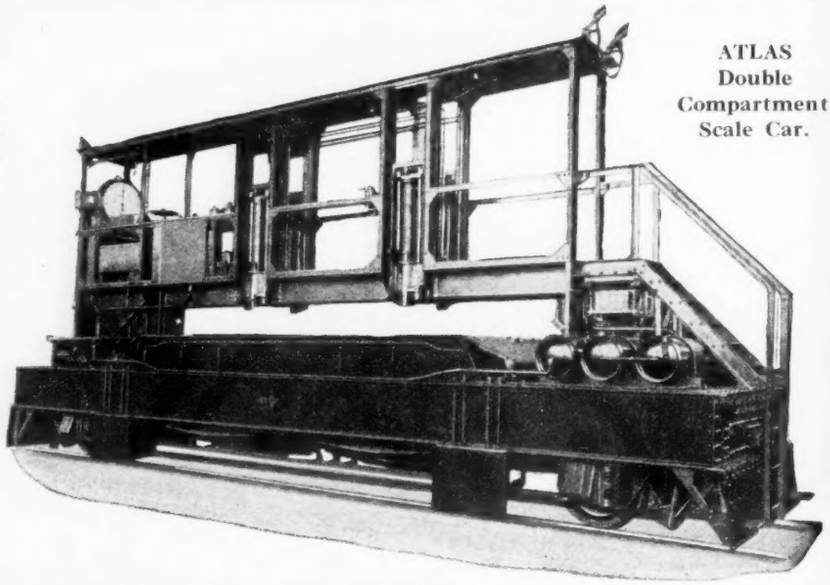
ATLAS

Indicating and Recording DIAL SCALES

The necessity of securing accurate weights, within the shortest possible time, has caused the dial scale to be included on practically all scale cars built in recent years.

The Atlas Indicating Scale with Recording Attachment, is in use in the plants of practically every large steel company in the United States, and many have been shipped to foreign countries.

Simple and very ruggedly constructed. You can depend on it for closest accuracy and long service. *Write for our Bulletin No.* 1225.



ATLAS Double Compartment Scale Car.

The ATLAS Car & Mfg. Co.

Engineers Cleveland, Ohio *Manufacturers*

ATLAS Products

Diesel and Gas Electric Locomotives—Storage Battery Locomotives—Electrically operated Industrial Cars—Scale Cars and Weighing Cars of all kinds—All kinds of Industrial Cars—Ore Transfer Cars and Blast Furnace Charging Cars—Pushers, Charging Cars, Door Handling Machines, and Coke Quenching Cars for By-Product Coke Ovens. Atlas Patented Indicating and Recording Mechanism for Weighing Scales.

Europe

British Industry Awaits Results of Suspension of Gold Standard —Prices Likely to Advance

London—(*By Cable*)—British industry is speculating on the probable result of the suspension of the gold standard by the government this week. As a measure intended to check the flow of gold to foreign countries and to strengthen the British financial position it is generally regarded with favor. However, as the gold value of the pound sterling depreciates, British prices are likely to be advanced to a compensating extent. In London Monday the pound sterling was quoted at $4.40, and in New York $4, compared with a close at $4.84⅞ last Saturday. Steelmakers point out that this fluctuation will be an uncertain factor, and have an unsettling effect on prices for some time.

In the meantime, the British Steel association leaves prices unchanged for fourth quarter. Pressure for tariffs is insistent, but there is no noticeable increase in purchases of European steel. The markets are stagnant. Galvanized sheets and tin plate are easier. Two more blast furnaces on the East coast have been blown out.

Pig iron production in Great Britain in August amounted to 275,700 tons, a daily rate of 8894 tons, compared with 10,226 tons in July. Output of steel ingots and castings was 357,300 tons; on a 31-day basis averaging 11,526 tons, against 14,296 tons in July.

STEEL'S correspondent at Berlin reports improvement in sales of wire nails to America, Great Britain and Holland. Belgium is more liberal with offerings of thin sheets in Germany. The report from Brussels states some steelworks are operating at capacity, though the markets generally are depressed. The situation in France is unchanged.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Sept. 21 (a)	British gross tons U. K. ports		Continental metric tons Channel or North Sea ports	
Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)				
PIG IRON				
Foundry, 2.50-3.00 Silicon	$14.22	2 18 6	$14.42 to $11.66	2 7 0 to 2 8 0
Basic bessemer	14.58	3 0 0*	10.94 to 11.18	2 5 0 to 2 6 0
Hematite, Phos. .03-.05	14.82	3 1 0	.....	.....
SEMIFINISHED STEEL				
Billets	$24.30	5 0 0	$13.37 to $13.61	2 15 0 to 2 16 0
Wire rods, No. 5 gage	41.31	8 10 0	24.30	5 0 0
FINISHED STEEL				
Standard rails	$40.10	8 5 0	$31.59	6 10 0
Merchant bars	1.52c	7 0 0	.68c to .69c	3 2 0 to 3 3 0
Structural shapes	1.68c	7 15 0	.66c to .67c	3 0 0 to 3 1 0
Plates, †¼-in. or 5mm.	1.79c	8 5 0	.83c to .84c	3 15 0 to 3 16 0
Sheets, black, 24 gage or 0.5mm.	1.90c	8 15 0	1.68c to 1.71c	2 12 6 to 7 15 0
Sheets, gal., 24 gage, corr.	1.93c	8 17 6	1.94c to 1.98c	8 17 6 to 9 0 0
Bands and strips	2.06c	9 10 0	.88c to .91c	4 0 0 to 4 2 6
Plain wire, base	1.84c	8 10 0	1.11c	5 1 3
Galvanized wire, base	2.39c	11 0 0	1.36c	6 3 9
Wire nails, base	2.39c	11 0 0	1.13c	5 2 6
Tin plate, box 108 lbs.	$ 3.28	0 13 6	$3.20	0 13 2‡

British ferromanganese £17 9s 6d ($85.00) delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.80) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Renten Marks	
Fdy. pig iron, Si. 2.5	$14.22	2 18 6	$10.98	280(2)	$12.83	460	$18.53	78
Basic bessemer pig iron	14.58	3 0 0*	10.19	260(1)	11.58	415	20.31	85.50
Furnace coke	2.67	0 11 0	5.68	145	5.16	185	5.08	21.40
Billets	24.30	5 0 0	16.46	420	17.44	625	26.25	110.50
Standard rails	1.79c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.52c	7 0 0	.90c	500	.77c	590	1.38c	128
Structural shapes	1.90c	8 15 0	.99c	550	.76c	585	1.35c	125
Plates, †¼-in. or 5mm.	1.95c	9 0 0	1.26c	700	.92c	705	1.59c	147
Sheets, black, 24 ga. or 0.5mm.	1.90c	8 15 0	2.09c	1,160	1.82c	1,400	1.26c	117
Sheets, galv., corr., 24 ga. or 0.5mm.	1.95c	9 0 0	2.39c	1,325	2.47c	1,900	3.56c	330
Plain wire	1.84c	8 10 0	1.68c	935	2.08c	1,600	2.24c	207
Bands and strips	2.06c	9 10 0	1.13c	625	.78c	600	1.60c	148

*Basic. †British ship-plates, Continental bridge plates. ‡German.

British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

(a) Because suspension of gold payments by Great Britain has resulted in a fluctuation in exchange, * which mills have as yet been unable to cope with by a revision of their prices, the rates of exchange for the previous week—Sept. 14—are used this week.

British Steel Industry Gains by New Budget

Birmingham, Eng.—Industry has accepted the new budget as inevitable in order to save the country from insolvency. While all classes will share the burden of heavier taxation, one factor has aroused the admiration of the British manufacturer, namely the more generous allowances in respect of wear and tear and replacement of obsolete plant.

This is an important matter for the steel industry. Though heavily taxed, both imperially and locally, steelmakers have pursued a policy of keeping their plants up-to-date and this has gone on throughout the period of the slump. It is therefore considered that the treasury's concession on this point is long overdue. As regards national expenditure serious cuts are already being made and reconstruction schemes curtailed and the steel trade is likely to feel the brunt of these economies.

Railroad Steel Buying Helps

In the north of England the steel trade has been encouraged by the announcement of a contract placed by the South African railway board for 9500 tons of steel with four firms in the north of England. Dorman Long & Co., Middlesbrough, are expected to tender on a big bridge building contract at Auckland harbor, New Zealand. A bill has been passed authorizing the construction of a bridge over Auckland harbor and as Dorman Long & Co. built the famous Sydney harbor bridge they are certain to make a fight for this order. In Middlesbrough specifications for ship plates are increasing and demand for structural steel is well maintained.

The pig iron position is a shade brighter in all markets. Buyers are moving with caution but business has been placed by works which have been out of the market for considerable time and this in itself is regarded as a hopeful sign. Furnacemen have obtained larger orders since the stabilization of the price at the end of August.

The position with regard to Continental material shows little change in the Birmingham district, except for the easy tone in prices, which is a noticeable feature.

Machinery

THAT September will be just another low month for the machine tool industry now is a foregone conclusion. However, the fact that a constant low level is held and no new depths plumbed gives hope that what lies ahead is a gradual upswing. For the time being Chicago has lost its position as the bright spot on the machine tool map. Reports this week from New England and other eastern markets indicate better feeling than is evident in the Middle West. However, hope is bolstered up by active user interest in new models rather than by actual orders. Design activity continues and new models are appearing at strategic points for production tests.

New York—A number of eastern machine tool builders are figuring on new equipment for the Ford Motor Co., presumably for model changes. While in most cases nothing definite is available as to quantities and specific needs, the opinion here is that additional equipment for Detroit will be considerable.

Two large contracts for multiple drilling machines, one from the Hupp Motor Co., Detroit, and the other from the Lycoming Mfg. Co., Williamsport, Pa., in addition to orders received previously from the Ford Motor Co., assure good fall business for the Bausch Machine Tool Co., Brightwood, near Springfield, Mass.

Otherwise new inquiry and buying is light, business being confined to one or two machines. Government shops took bids this week on more than 20 tools, but closing on this type of business is slow. Seventeen lathes for Brooklyn navy yard are still pending as is the list for the 207 street subway shops. Ball bearing producers are slow to pick-up, their curtailed operating schedules being continued. Foreign volume also is off, with Russia apparently out of the market for the next two or three months.

Worcester, Mass.—Although plenty of inquiry is reported in some sections, the machinery market in general shows no upward trend. There still is some inquiry coming out of Detroit, but the flurry of business from the Chicago district has dwindled. There is, however, an active possibility of more business from Russia.

Last week Sleeper & Hartley shipped a 6-ton torsion machine to Russia for use in connection with the manufacture of Ford cars, and has on the floor nine nail machines for Detroit.

Surveying the whole market, orders are found to be scarce. In case of lathes for instance, the large Brooklyn navy yard order is still pending, and inquiry has been opened for six machines for the yard at Newport, R. I. An occasional lathe is being sold here and there for school purposes, which practically summarizes activity in this branch of the business.

There are no marked indications here that the expected September revival will materialize to any extent. Furthermore that some skepticism is being publicly expressed as to the chances for continuation of Russian business in satisfying volume.

Cleveland—It now is evident that in spite of automotive buying, September is just another low month for the machine tool industry. Nevertheless, several builders here are encouraged by the fact that they are holding a constant level, low as it is, rather than plunging to greater depths.

They interpret this condition to mean that even though that ever receding corner may not as yet have been turned, the bottom has at least been reached, with a long drawn out upswing in prospect.

Large attendance at the operating demonstrations of Kearney & Trecker milling machines, held this week by the Motch & Merryweather Machinery Co. testifies to lively interest in new designs.

Pittsburgh—Machine tool sales so far this month show little change from the August rate and inquiry also is slow to improve. The volume of inquiry and pending business certainly is well below that of a year ago and is said to be barely one-third of what it was during the corresponding 1929 period.

Orders in practically all cases are limited to individual tools and large lists are lacking in prospective work. As for some months past, activity among the heavy machinery builders remains fairly good. Recent orders include a tube mill placed by the Pittsburgh Steel Products Co. with the Aetna Standard Engineering Co., Youngstown, O., while the Allegheny Steel Co. has purchased a semifinished mill from Mesta Machine Co.

Chicago—More pronounced indications are seen that a number of buyers are considering seriously their possible needs for machine tools, and some shopping for used tools actually is occurring. In many such instances, purchases of used tools are temporary expedients, buyers being uncertain about going ahead with extensive new equipment programs.

Santa Fe railroad has completed the purchase of most of its season's equipment, but may issue more inquiry later to cover some items not yet closed on the general list issued last spring. A fair amount of used tools is being offered to the market from light manufacturing concerns, and occasionally trade-in possibilities are discussed. Actually, only about a half dozen small inquiries for new tools now are before the market.

Prices remain fairly steady and it is expected that renewal of existing price policies will follow meetings here next month of machine tool builders, and of machine tool dealers associations.

Machinery Exports in July Dropped to Old Level

Foreign sales of industrial machinery, after a brief recovery in June, again approximated the constant level at which exports of this class of goods have been maintained during recent months. Customs returns show that the july total was $11,000,000, representing a decrease as compared with the figure of $15,000,000 established in the previous month but approaching the monthly average for 1931 of slightly above $12,000,000. It should be understood however, that inevitable fluctuations which this trade is subjected preclude the placing of too much emphasis on monthly returns as an indicator of yearly trends. The only increase noted took place in shipments abroad of well and refining equipment, which surpassed the figure for June by more than $600,000.

Activity in foreign shipments of metalworking machinery during July fell off considerably when compared with the trade in this line during June. This difference in monthly totals may be partly explained by pointing out that June shipments were unusually heavy and did not reflect a normal situation. In fact, the June total of $5,280,000 was 55 per cent higher than the average monthly figure for the boom year of 1929. A more satisfactory comparison of metalworking machinery exports may be obtained by considering shipments for July, 1930 and July, 1931. The totals in this instance were $3,183,000 and $2,778,000 respectively.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

CAMBRIDGE, MASS.—School commission is having plans prepared by R. H. Doane, 60 Batterymarch street, Boston, fo a 3-story technical school on Broadway, estimated to cost $1,500,000.

WORCESTER, MASS.—Sewer department, J. H. Brooks Jr., superintendent, will build a 3-story workshop and storehouse, 50 x 175 feet, to cost $150,000.

New York

BROOKLYN—Crescent Smelting Works has been incorporated to conduct a sheet metal works, with $15,000 capital, by P. Novick, 270 Broadway, New York.

BROOKLYN—Crown Cap Mfg. Co., Inc. has been incorporated in Delaware with 1000 shares no par value and $100,000 prefered, by Byron L. Vallard, Capital Bank tower, Detroit.

NEW YORK—Baird Television Corp., 145 West Forty-fifth street, is planning a plant for manufacture and assembling of parts. Cost, including equipment, will exceed $40,000.

NEW YORK—Holley Safety Window has been incorporated with 300 shares of common stock to manufacture window frames, by Holley & Oxenberg, 40 East Forty-first street, New York.

NEW YORK—Rightway Oil Burner Corp. has been incorporated to manufacture oil burning equipment, with $20,000 capital, by I. Kayfetz, 1603 President street, Brooklyn, N. Y.

New Jersey

BOGOTA — Hydraulic Appliance Corp. has been incorporated with $25,000 preferred stock and 1500 shares common no par value, to manufacture household appliances.

CAMDEN—Curtis Aero Ignition Co. Inc., has been incorporated with 2500 shares common stock by the New Jersey Corporation Guarantee & Trust Co., Camden.

ELIZABETH—Board of education, 417 South Broad street, is having plans prepared for a 3-story manual training and industrial art school to cost $150,000. H. B. Brady Inc., 333 North Broad street, is architect.

MAURER—United Lead Co., Maurer, plans erection of a 2-story plant at South Amboy, N. J., to cost $40,000.

NEWARK—Aeroland Transportation Co. Inc. has been incorporated with 2500 shares common stock no par value to conduct a general engineering business, by J. Rosenbaum, Newark.

NEWARK—American Metal Spinning & Welding Co. has been incorporates with 10 shares common stock to conduct a business in aluminum welding and similar work by Benjamin Kleinberg, Newark.

Pennsylvania

NORRISTOWN—Penn Tack Co., plans to install electric power equipment in rebuilding the burned portion of its plant at a cost of $100,000.

Ohio

AKRON—Bids will close Sept. 25 on Guggenheim Aeronautical Research institute building, for University of Akron. Cost estimated at $100,000. M. M. Konarski, central high school, Akron, is architect.

CLEVELAND—Bids will be closed Sept. 25 on bridge and approaches, reinforced concrete 1700 feet long, on Northfield road. J. O. McWilliams, Western Reserve building, Cleveland, is resident engineer.

DOVER—Council is planning additions to the municipal electric light and power plant, including 1500-kilowatt turbine, at a cost of $75,000.

EATON—An election will be held Nov. 3 on the question of approval of an ordinance for building a municipal electric light, heat and power system and authorizing trustees to advertise for bids. W. O. Gross is mayor.

GIRARD—Pennsylvania railroad is having plans made for concentrating terminal and roundhouse facilities here, moving centers from New Castle Pa., and Alliance, O. Cost is estimated at $1,000,000.

LONDON—Bids will be taken Oct. 6 by John McSweeney, director, department of public welfare, Oak and Ninth streets, Columbus, O., for boiler, stokers and other power plant equipment at the London prison farm.

PIQUA—A special election is to be called for November for approval of $810,000 in bonds for municipal electric light and power plant. Burns & McDonnell Engineering Co., Interstate building, Kansas City, Mo., are engineers.

Michigan

DETROIT—American Blower Corp., advises it has obtained a site for a plant but will not develop it for some time.

DETROIT—Chromed Screw Corp., 7638 Gratiot avenue, recently organized to specialize in plating of small production parts in various finishes, advises it has bought part of its equipment and will require some special machinery to complete its installation. (Noted Sept. 3).

DETROIT—Wolverine Smelting & Refining Co. has been incorporated with 100,000 shares no par value and $30,000 preferred stock to smelt and refine nonferrous metals, by Dean F. Carscadden, 241 Summitt avenue, Detroit; A. J. Stacker, Orchard Lake; D. E. Bliss, Flint.

Indiana

INDIANAPOLIS—Economy Machinery Co. has been incorporated to manufacture equipment for the manufacture of ice cream. Fred Millis, president, advises that a plant will be built for production of the new devices.

PETERSBURG—Bids will be taken until Oct. 5 by Petersburg Water Filtration Corp., R. W. Dyer president, Petersburg, for filtration and pumping plant, including diesel engine, generating units and accessories and electrically-operated centrifugal pumps.

RICHMOND—Richmond Fireproof Door Co. has been incorporated with $300,000 capital to manufacture fireproof doors and similar devices, by A. L. Oppenheimer, 2211 Woodward avenue, Detroit.

Illinois

CHICAGO—Castings Corp., 140 North Dearborn street, has been incorporated with $20,000 capital to conduct a general foundry business, by A. and L. Rossitt and T. Weiss.

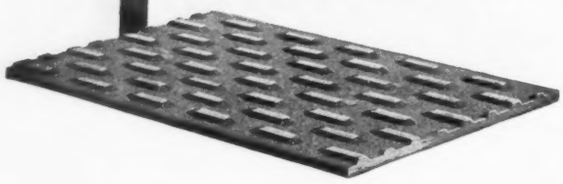
CHICAGO—Ace Clock Co., 29 East Madison street, has been incorporated with $20,000 capital to manufacture clocks, by Golden & Golden, 100 West Monroe street, Chicago, Maurice L. Lewis, Harry S. Jacobs and M. Klayf.

CHICAGO—Eddy Stoker Corp., 372 West Grand avenue, recently organized, has started the manufacture and installing of underfeed stokers for automatic burning of coal in domestic boilers. Quarters have geen leased in the R. M. Eddy Foundry plant.

DECATUR—Himan Loeb Inc., 331 Wabash avenue, has been incorporated with $10,000 capital to deal in scrap metals and waste of all kinds, by Martha, Jack and Harry Loeb, McDavid, Monroe & Mann, 502 Millikin building, Decatur, are correspondents.

PARK RIDGE, ILL.—Central States Construction Co., 1 South Prospect street, has been incorporated with $5000 capital to do a general contracting business, by Oscar Wyclif Hay-

ILLINOIS FLOOR PLATE



Section M-41

Furnished to the following dimensions:

Thickness—$\frac{3}{16}$" to $\frac{3}{4}$" exclusive of raised figure.
Weight —8.8 to 31.7 pounds per square foot.
Width —6" to 72".
Length —240" maximum for all gauges and widths.

This design drains and cleans readily and is recommended for all service where a safe footing is required.

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General Offices: 208 South La Salle Street, Chicago, Illinois

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The quality of materials used; the methods of processing, machining, threading and finishing; the methods of packaging and quality of containers used all have a bearing on the value you receive for your bolt and nut money.

Clark's 77 years of specialized bolt and nut manufacturing experience and the close inspection given are but two of the reasons why you can obtain greater value by specifying Clark Products.

CLARK BROS BOLT CO.
RIDGE ROAD
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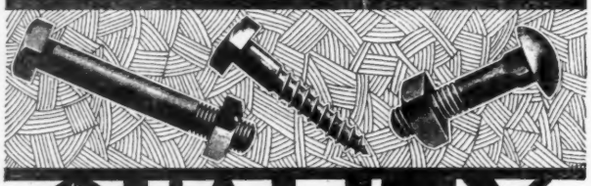

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PREPARATION

Requires:

GOOD FORESIGHT
EXACT KNOWLEDGE
SOUND JUDGMENT
WIDE EXPERIENCE
constantly being
"ON THE JOB"

You would not place your Company's capital funds in the care of an irresponsible bank.

You would not leave them in any bank without exercising careful supervision at all times.

Your Company's Plant is an essential part of its most valuable capital.

Is that plant ready and PREPARED to do its part toward helping to meet a competition which will undoubtedly be as keen as any ever experienced in this country?

KIEFER SHEETING & PAINTING CO.
House Bldg. — Pittsburgh, Pa.

Corrugated Sheeting Erection and Repairs—Industrial Painting

AMERICAN BRIDGE COMPANY

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STEEL STRUCTURES
BRIDGES & BUILDINGS

GENERAL OFFICES: 71 BROADWAY, NEW YORK, N. Y.

CONTRACTING OFFICES IN PRINCIPAL CITIES

man, Builders building, 228 North LaSalle street, Chicago.

ROCK ISLAND—Major Glen E. Edgerton, district engineer, United States enginneer office, advises work on a roller dam will be let to contract within 90 days. Metal work involved in this project includes 300 tons of steel piling, 1675 tons of structural steel, 125 tons of castings and 5000 tons of reinforcing steel.

Southern States

WASHINGTON—Bureau of supplies and accounts, navy department, will open bids Sept. 29 for one high-pressure vapor spray cleaning machine, on schedule 6529.

WASHINGTON—Bids will be received until Oct. 14 at the office of the general purchasing officer of the Panama canal, Washington, for hydraulic and electrical equipment for the Madden Dam project in the Canal Zone. The schedule number is 2685.

JACKSONVILLE, FLA.—Self Setting Trap Co. has been incorporated with $20,000 capital to manufacture traps and decoys, by A. Johnson, 515 Thirteenth avenue N. E.

AUGUSTA, GA.—Augusta Canal Co., has plans under way by Burns & McDonnell Engineering Co., Kansas City, Mo., for an electric generating plant to cost $1,000,000 with equipment.

SAVANNAH, GA.—City is having plans prepared by Marcel, Mazeau & Co., Jacksonville, Fla., for a steel and reinforced concrete hangar for which bids will be called so soon.

LAWRENCEBURG, KY.—An election will be held in November on proposal to issue $40,000 in bonds for construction of a water works system.

LOUISVILLE, KY.—Louisville Gas & Electric Co., T. Bert Wilson president, is having plans made for two substations, at 1710 South Eleventh street and in Crescent Hill, units in $500,000 improvement program.

NEW ORLEANS — New Orleans levee board, John Klorer chief engineer, has had plans made by National Airport Engineering Co., William E. Archer president, Los Angeles, for Sushan airport on Lake Pontchartrain, the administration building for which is to cost $90,000.

SHREVEPORT, LA.—Lincoln Tank Co., Electra, Tex., is building a plant 108 x 230 feet. Equipment will be moved from the Electra plant, which is to be abandoned.

Missouri

KANSAS CITY—Empire Vending Machine Corp. Inc., 1420 Commerce building, has been incorporated to manufacture selling devices by Gilbert E. Graham.

SULLIVAN—Bonds for $80,000 have been voted by city for a municipal electric light and power plant. W. A. Fuller Engineering Co., St. Louis, has been awarded the general contract.

Oklahoma

HOBART CITY,—A. A. Kirby mayor, is having plans made for an increased water supply, involving expenditure of $450,000.

TULSA—Calumet Construction Co., 840 East Apache street, plans to install a machine shop for construction and repair of special asphalt mixers. Lathes and a drill press will be required. Dan Thalman is superintendent.

TULSA—City has awarded a contract to the Acme Construction Co. for a shop building 30 x 100 feet to provide mechanical training facilities for delinquents. Equipment will include metalworking tools.

Texas

DALLAS—United Air Lines, Chicago, is taking bids on a hangar to cost $75,000 at Love field municipal airport, including shops and a garage.

FORT WORTH—Kent Short Metal Works has been organized by Kent Short 103 Throckmorton street.

FORT WORTH—Sinclair Refining Co. is having plans made for reconstruction of the old Pierce oil refinery here into a modern unit, including erection of a machine shop and boiler station. J. N. Youmans, Sinclair building, engineer, is in charge of construction.

HOUSTON—Southeastern Can Co., H. O. Westwood vice president and general manager, construction of whose new plant has been noted, advises that construction plans have been held in obeyance until the first of the year. (Noted March 19).

HUNTSVILLE—Fire recently destroyed the plant and powerhouse of the Walker County Lumber Co. at Elmina, Tex., near here. Plans have been made for rebuilding.

SAN ANGELO, TEX. — Superior Tool Co. has been incorporated with $10,000 capital to deal in tools and similar products, by A. R. Eppenauer, Mrs. A. R. Eppanauer and Carl G. Nelson.

Wisconsin

ALMA—Bids will be taken until about Oct. 15 by Col. Wildur Willing, district engineer, 615 Commerce building, St. Paul, for a lock and dam, to cost $3,500,000, including a lock 110 x 600 feet, four roller gate sections 100 feet each, 30 tainter gates 30 feet each, and an earth dam a mile long.

ASHLAND—Revised plans for the proposed $100,000 briquetting plant to be built here for the Pittsburgh & Ashland Coal & Dock Co., 1014 Foshay tower, Minneapolis, have been approved by the state and bids will be taken at once for its construction. Plans are by Roland C. Buck Inc., 919 Tower avenue, Superior, Wis. F. M. Hogan is manager at Ashland.

EAU CLAIRE—City council, O. E. Oien clerk, plans to build a 1,250,000-gallon reservoir or steel tank. Carl E. Meyer is city engineer.

MANITOWOC—New bids under revised plans are being taken by the board of vocational education for a 2-story vocational institute, 78 x 250 feet. Appropriation is $200,000.

MILWAUKEE—Nordberg Mfg. Co., 3073 South Chase avenue, has let contract to the Coddington Engineering Co., 1012 North Third street, Milwaukee, for a monitor on its foundry, 100 x 400 feet, and other alterations, to cost $30,000.

Minnesota

MINNEAPOLIS—Twin City Broom Mfg. Co., 413 Lyndale avenue, is having plans made for rebuilding its burned plant.

MINNEAPOLIS—Board of education, George F. Womrath business superintendent, has started construction of the first unit of a vocational school, to cost $400,000.

ST. PAUL—Col. Wildur Willing, district engineer, 615 Commerce building, will receive bids early in December for a quarter boat.

North Dakota

DICKINSON, N. DAK.—Northern Pacific railroad, M. F. Clements bridge engineer, 1208 Railroad building St. Paul, is having plans made for a coal dock, including conveying machinery.

Iowa

CLEAR LAKE, IOWA—Clear Lake Sand & Gravel Co. is in the market for a ¾ to 1-yard gasoline driven clam or dragline caterpillar.

CORNING, IOWA—Great Lakes Pipe Line Co., Kansas City, Mo., has given a contract to John Whitehurst, Ponca City, Okla., for a pumping station at Bixler Park, Iowa to cost $100,000.

INDIANOLA, IOWA—A. R. Smith, city clerk, will receive bids until Oct. 5 for a 400,0000-gallon capacity elevated water tower, to cost $30,000.

SIOUX CITY, IOWA—Sioux City Gas & Electric Co., 517 Fifth street, will start soon on construction of a power plant addition to cost $650,000, including a generating unit, turbine room and changes and additions in boiler system.

Kansas

KANSAS CITY—Polax Mfg. Co., manufacturer of liquid solder, is

building a 2-story addition to its plant 36 x 40 feet.

Montana

WOLF POINT, MONT.—State highway department, R. D. Rader engineer, Poplar, Mont., will build a 1-story shop to cost $15,000. McIver & Cohagen, Great Falls, Mont., are architects.

Nebraska

HASTINGS, NEBR.—State board of control, H. S. Thorpe chairman, will rebuild the 1-story machine shop recently burned at the state hospital for the insane, at a cost of $18,000.

Pacific Coast

LONG BEACH, CALIF.—Long Beach Market Co., Broadway and Atlantic avenue, plans installation of power equipment and electrically operated refrigeration in the new market building on Broadway near Lime street, at a cost of $400,000 for the entire program.

LOS ANGELES—Angelus Sanitary Can Machine Co., 4900 Pacific boulevard, is erecting 6000 square feet of additional manufacturing space and adding to office facilities at a cost of $35,000.

SAN FRANCISCO—Stauffer Chemical Co. has let contract to the Austin Co., Cleveland, for two buildings at Vernon, Calif., for manufacture and storage of fertilizer products at a cost of about $50,000.

PORTLAND, OREG.—Pacific Phosphate & Chemical Co., 210 Postal building, by Allan Swain, president, announces it will build a $25,000 plant at Kenton, Oreg.

WENATCHEE, WASH.—City officials are considering bids for construction of a 4,000,000-gallon concrete reservoir 166 x 206 feet, to cost about $75,000.

Dominion of Canada

EDMONTON, ALTA.—Construction of a technical school is being considered as part of the unemployment relief program, to cost $750,000. H. Haddow is city engineer.

VANCOUVER, B. C.—Barber-Ellis Ltd., 1206 Homer street, has let several contracts in connection with a new plant, to cost $60,000.

WINNIPEG, MANN.—E. P. Patterson, engineer of the provincial water powers department, Winnipeg, is investigating the possibilities of water power development of the Dauphin river, where 400,000 horsepower are estimated to be available.

SMITHS FALLS, ONT.—Citizens have adopted a bylaw to raise $70,000 for the purchase of the Malleable Castings Co., which otherwise would have had to discontinue operations.

TORONTO, ONT.—Macey Sign Co. Ltd. has been incorporated with $100,000 capital stock by Thomas J. Macey, Toronto.

QUEBEC, QUE.—Reconstruction is to be undertaken at once of the burned shops of the Canadian National railway at Limoilu, Que.

VERDUN, QUE.—Two waterworks pumping stations are included in the city's proposed construction for relief of unemployment, one to cost $113,500 and the other $14,500. An incinerator to cost $150,000 is another item. H. Hadley is city engineer.

New Trade Publications

DIE HEADS — Eastern Machine Screw Corp., New Haven, Conn., is distributing a bulletin on a new type of self-opening die head it has developed. Description and engineering data are presented.

PNEUMATIC TOOLS—Cleveland Pneumatic Tool Co., Cleveland, has issued a catalog in French for use in export trade. It illustrates products of this company and its associate, the Cleveland Rock Drill Co.

ARC WELDING—Arc welded mill buildings form the subject matter of Plate 27 in the series of studies in arc welding by the Lincoln Electric Co., Cleveland. Drawings supplement the text in making clear the welding methods.

HEAT - RESISTANT ALLOY—American Manganese Steel Co., Chicago Heights, Ill., in a current bulletin lists and illustrates a wide variety of applications of its product, Fahralloy, for resistance to heat, corrosion and abrasion.

TRAMRAIL — Cleveland Electric Tramrail division of the Cleveland Crane & Engineering Co., Wickliffe, O., has issued a bulletin outlining some of the uses to which its tramrail can be applied in the foundry industry. Illustrations show typical installation.

STRIPPING SHOVEL—United Electric Coal Companies, New York and Danville, Ill., in a bulletin covering its methods of strip mining in the Illinois field, shows in action its gigantic stripping shovel, claimed to be the largest in the world.

SAND HANDLING—Complete sand handling, reclamation, and conditioning systems are recommended as a means for cutting steel foundry costs in a recent folder issued by the Jeffrey Mfg. Co., Columbus, O. A suggested layout is sketched and illustrations show typical applications.

INDUCTION HEATER—Bulletin No. 134 by the Thomson-Gibb Electric Welding Co., Lynn, Mass., and Bay City, Mich., describes its induction heater, air operated, designed for rings, tires and all shapes which can be clamped or assembled into a circular structure.

THRUSTOR—General Electric Co., Schenectady, N. Y., has issued a bulletin on its thrustor, an electric device for exerting a smooth powerful thrust with a quick cushioned return. It is designed for use on hand or foot-operated machines, making them power-driven, electrically controlled.

SPEED REDUCERS—Catalog No. 53, recently issued by Palmer-Bee Co. Inc., Detroit, describes and illustrates a wide variety of speed reducers in herringbone, worm and spur gear types. Engineering data are given and mechanical features of construction illustrated. Superiority in design and construction is pointed out.

BALL BEARINGS—Eighth edition of its price and data book has been issued by the New Departure Mfg. Co., Bristol, Conn., containing important revisions and additions to previous listings of types, capacities, dimensions and mounting details for engineer and designer. A marginal index aids greatly in finding various sections.

TRICHLORETHYLENE — Modern methods of cleaning and degreasing metal articles with noninflammable trichlorethylene or its vapors are discussed in a booklet on the substance issued by the Rossler & Hasslacher Chemical Co. Inc., Niagara Falls, N. Y. Data on the substance are supplied to indicate its properties.

STEAM—Modern steam is the subject of a bulletin published by the Babcock & Wilcox Co., 85 Liberty street, New York. It outlines the development of marine steam propulsion from low pressure to the present economical use. It also deals with economies of steam in fuel consumption, flexibility of operation and cost of fuel and lubricating oils.

POWER TRANSMISSION—Coventry Chain Co. Ltd., Coventry, Eng., and Hans Renold Ltd., Manchester, Eng., associated companies, have issued a combined catalog of products for industrial application. A statement is made of the policies concerning marketing of the products of the associated companies. The catalog covers a large assortment of chains, chain drives and accessories sufficient to cover a wide range of industrial needs.